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**TM 9-1430-1256-12-1(FMS)**

**TECHNICAL MANUAL**

**OPERATOR AND ORGANIZATIONAL  
MAINTENANCE MANUAL**

**CHECK PROCEDURES**

**TARGET TRACKING, TARGET RANGING,  
AND MISSILE TRACKING RADAR SYSTEMS  
AND RADAR TEST SET GROUP**

**IMPROVED NIKE-HERCULES AIR DEFENSE GUIDED MISSILE SYSTEM (U)**

**(ALLIED CONFIGURATION)**

Flugabwehrkommando Station 21  
De-10y Punkt  
Verstärkung 13. Dez. 1983  
Datum 392 / 83  
Uhr 07

**NATIONAL SECURITY INFORMATION**  
Unauthorized Disclosure Subject to Criminal Sanction.

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**DEPARTMENT OF THE ARMY**

**SEPTEMBER 1983**

Classified by NIKE SECURITY GUIDE, Aug 79  
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Change )

No. 1 )

HEADQUARTERS,  
DEPARTMENT OF THE ARMY  
Washington, D.C., 1 JUNE 1984

## OPERATOR AND ORGANIZATIONAL MAINTENANCE MANUAL:

## CHECK PROCEDURES:

TARGET TRACKING, TARGET RANGING, AND MISSILE TRACKING  
RADAR SYSTEMS AND RADAR TEST SET GROUP  
(IMPROVED NIKE-HERCULES AIR DEFENSE GUIDED MISSILE SYSTEM) (U)

(ALLIED CONFIGURATION)

TM 9-1430-1256-12-1 (FMS), 1 September 1983, is changed as follows:

1 (U). The pages affected by this change, appearing in the following listing, are to be inserted in the manual after the MWO has been applied. Those pages identified as "All systems" may be inserted immediately. Added or changed material is indicated by a vertical line in the margin of the page. The completely revised tables are indicated by a vertical line by the title only. Old pages removed from the manual are to be destroyed in accordance with AR 380-5 or applicable security regulations.

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JOHN A. WICKHAM, JR.  
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## OPERATOR AND ORGANIZATIONAL MAINTENANCE MANUAL:

### CHECK PROCEDURES:

TARGET TRACKING, TARGET RANGING, AND MISSILE TRACKING  
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Washington, D. C., 7 August 1985

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*Brigadier General, United States Army*  
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**WARNING**



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**HIGH VOLTAGE**

is used in the operation of this equipment

**DEATH ON CONTACT**

may result if personnel fail to observe safety precautions

Never work on electronic equipment unless there is another person nearby who is familiar with the operation and hazards of the equipment and who is competent in administering first aid. When the technician is aided by operators, he must warn them about dangerous areas.

Whenever possible, the power supply to the equipment must be shut off before beginning work on the equipment. Take particular care to ground every capacitor likely to hold a dangerous potential. When working inside the equipment, after the power has been turned off, always ground every part before touching it.

Be careful not to contact high-voltage connections or 115-volt ac input connections when installing or operating this equipment.

Whenever the nature of the operation permits, keep one hand away from the equipment to reduce the hazard of current flowing through vital organs of the body.

**EXTREMELY DANGEROUS POTENTIALS**

greater than 500 volts exist in the following unit:  
Flight Simulator Group

*Warning:* Potentials less than 500 volts may cause death under certain conditions. Reasonable precautions should be taken at all times.

For artificial respiration, refer to FM 21-11.

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TECHNICAL MANUAL)

No. 9-1430-1256-12-1 }

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\*This technical manual supersedes (C) TM 9-1430-1256-12-1, dated 1 December 1981, including change 1.

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Appendix 1

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## CHAPTER 1 (U)

### INTRODUCTION

#### Section I (U). GENERAL

##### 1-1 (U). Scope

a. (U) This is one of a series of technical manuals on the operation, emplacement, and maintenance of the Allied HERCULES Air Defense Guided Missile System. Refer to TM 9-1426-1250-L for a listing of DA publications applicable to the HERCULES system.

b. (U) This manual is published for the information and guidance of operator and organizational maintenance personnel responsible for adjusting and maintaining the target tracking, target ranging, and missile tracking radar systems and radar test set group of the Allied HERCULES system after initial emplacement and during normal operation. Also included in this manual are certain special checks to be performed upon initial emplacement as prescribed in TM 9-1430-1251-10 or after replacement of repair parts.

c. (U) This manual is technically correct for all Allied HERCULES Air Defense Guided Missile Systems provided modification work orders (MWO's) and Contractor Installation Procedures (CIP's) listed on the transmittal sheet of each change have been applied.

##### 1-2 (U). Maintenance Allocation

In general, the prescribed maintenance responsibilities of the organizational maintenance technician and operator apply as reflected in the allocation of tools and repair parts in the supply

manuals. Normally, operator maintenance may be performed only under the supervision of a trained organizational maintenance technician. When the nature of repair, modification, or adjustment is beyond the scope of the organizational maintenance technician, the supporting maintenance unit should be informed so that personnel with suitable tools and equipment can be provided.

##### 1-3 (U) Nomenclature

A cross-reference index of technical manual and official nomenclature for items of the radar course directing central of the Allied HERCULES system is provided in TM 9-1430-1251-12-3, TM 9-1430-1256-12/2, and TM 9-1430-1256-12/2.

##### 1-4 (U). Forms, Records, and Reports

Refer to TM 38-750 for instructions on the use and completion of all forms required for operating and maintaining the equipment.

##### 1-5 (U). Report of Equipment Publication Improvements

Report of errors, omissions, and recommendations for improving this publication by the individual user is encouraged. Reports should be submitted on DA Form 2028 (Recommended Changes to DA Publications) and forwarded directly to: Commander, U.S. Army Missile Command, ATTN: DRSMI-SNPMH, Redstone Arsenal, Alabama 35898.

#### Section II (U) TARGET TRACKING, TARGET RANGING, AND MISSILE TRACKING RADAR SYSTEMS AND RADAR TEST SET GROUP CHECK PROCEDURES

##### 1-6 (U). Scope

a. (U) This manual contains daily, weekly, monthly, nonperiodic, and special checks in tabular form. Performance of the periodic and nonperiodic checks will insure that the equipment is capable of reliable operation. The special checks will be used to determine if the equipment is operating correctly when a part is

replaced. Failure to perform the checks at the intervals specified may result in inefficient operation or failure of the equipment to perform its required function at a critical moment.

b. (U) Connection of the AN/MPQ T1 trainer will affect the performance of checks in some instances. Before performing any check procedures in the radar course directing central

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(RCDC), insure that the trainer is deenergized below the STANDBY condition. If a check does not fall within the specified tolerances after an adjustment is made, manually disconnect the trainer cables and repeat the adjustment to determine the source of the malfunction.

c. (U) Checks that require monitoring the output of the MTR or TTR receiver may be affected by RF interference between the MTR and TTR systems. In order to minimize such interference, insure that the MTR and TTR antennas are not simultaneously aimed at the radar test set mast or other common object.

## 1-7 (U) Contents

a. (U) The steps in each table must be performed in sequence. All major items, assemblies, and subassemblies are identified by TM nomenclature. Proper use of the check procedure tables is described in (1) through (3) below.

Note. All tables, steps, or corrective procedures preceded by an asterisk must be performed by a maintenance technician.

(1) (U) In using the tables, first perform the operation and observe the indication. If the indication is not within the specified tolerances, perform the adjustment given in the corrective procedure column. If the adjustment does not correct the indication or if an adjustment is not given, a maintenance technician should refer to the functional schematic figure reference provided in the corrective procedure column. Adjustments which are required at more frequent intervals than specified by the check procedures indicate a malfunction. Corrective procedures may reference entire tables or portions of tables. After performing corrective procedures, insure that the switches are reset to their original positions before continuing with the procedures.

(2) (U) In some cases, the test equipment used to perform the checks may be different from that covered in the manual. In these cases, the procedures provided should be con-

sidered typical and used as a guide to perform the checks using the available equipment. The control settings given should provide adequate indications, however, fine adjustments may be made to obtain optimum indications. Ground or neutral connections used to monitor voltage or current are specified when other than frame or chassis ground is used. When external sync connections are not specified for oscilloscope test connections, the internal sync is to be used.

(3) (U) In localizing a trouble, the maintenance technician should use the appropriate functional schematic diagram. References to the functional schematic diagrams are listed in the corrective procedure column to aid in isolating causes of a trouble. If the applied troubleshooting technique indicates that the probable cause is a component listed in TM's 9-1430-1250-24P-7-1, 9-1430-1250-24P-8-1, 9-1430-1250-24P-10-1, or 9-1430-1250-24P-22-1, replace the component. If the component is not listed for organizational repair or replacement, its repair or replacement is reserved for supporting maintenance personnel. When the trouble has been corrected, proceed to the next step.

b. (U) The periodic check procedures contain the steps to be followed when performing the daily, weekly, or monthly check procedures. The steps must be performed in the sequence listed, however, each table is written so that it may be performed independently for maintenance purposes.

c. (U) The nonperiodic check procedures contain checks that do not have to be performed at periodic intervals. These checks will be performed upon initial emplacement as prescribed in TM 9-1430-1251-10, when trouble is suspected in the part of the system to which they apply or prior to any drill or exercise for which a nonperiodic check has been provided.

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d (U) The special check procedures contain checks which are to be performed upon initial emplacement as prescribed in TM 9-1430-1251-10 or when a component is replaced. These checks will determine if the system is function-

ing correctly after replacement.

e (U) All schematic references throughout this manual refer to TM 9-1430-1256 20/3 unless otherwise indicated.

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## CHAPTER 2 (C)

### DAILY CHECK PROCEDURES

(U) Table 2-1 Daily Power Checks

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Step	Operation	Normal indication	Notes on procedure
1.	<b>Perform the primary power checks for the target tracking radar (TTR) and missile tracking radar (MTR) systems.</b>		
	<i>Note:</i> The primary power checks are performed with the MAIN POWER switch set to off (down).		
	a. On the radar power control-indicator, set the PHASE switch to C.	The LINE VOLTS meter indicates 120 volts.	Adjust the ADJUST PHASE C knob Refer to figure 24
	b. Set the PHASE switch to B, then to A.	The LINE VOLTS meter indicates within the limits of 117.5 and 127.5 volts at each position.	Refer to figure 24
2.	<b>Perform the primary power checks for the target ranging radar (TRR) system.</b>		
	a. On the range radar power control-indicator, set the LINE VOLTS SEL switch to $\phi$ C.	The LINE VOLTAGE meter indicates 120 volts when the tracking station group is operating with two motor alternators or engine alternators.	Adjust the ADJUST PHASE C knob Refer to figure 79
		The LINE VOLTAGE meter indicates within the limits of 117.5 and 127.5 volts when the tracking station group is operating with one motor alternator or engine alternator.	<b>Warning:</b> Before changing phase adjust power switch S17 connection on the range radar power control-indicator, the motor alternator or engine alternator must be deenergized. Loosen the locking nuts and connect phase adjust power switch S17 to the open position. Tighten the locking nuts. Make phase adjustments on the radar power control-indicator.
	b. Set the LINE VOLTS SEL switch to $\phi$ B, then to $\phi$ A.	The LINE VOLTAGE meter indicates within the limits of 117.5 and 127.5 volts at each position.	Refer to figure 79

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(U) Table 2.1 Daily Power Checks--Continued

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Step	Operation	Normal indication	Corrective procedure
	4. To A) controls and indicators in step 3 below are placed on the radar power control indicator unless otherwise indicated.		
3	Perform the ac power checks for the TTR and MTR.		
a	On both radar control consoles, set the TEST switch to TEST (up)		
b	Set the MAIN POWER switch to ON	The TARGET-INTLK and MISSILE-INTLK indicator lights illuminate	Refer to figure 31 (MTR). Refer to figure 62 (TTR).
		On the range radar power control indicator, the PLATE VOLTAGE-INTLK indicator light illuminates.	Refer to figure 86
c	Set the EQPT VENT switch to on (up)		
d	Set the TARGET POWER switch to ON	The TARGET-HIGH VOLTS-PREHEAT indicator light illuminates.	Refer to figure 63.
		Three TARGET-350V fuse indicator lights on the fuse panel illuminate.	Refer to figure 55.
		The TARGET-PLATE VOLTS-READY indicator light illuminates within 20 to 30 seconds.	Adjust variable resistor R11 on the TTR 20-30-second delay timer. Refer to figure 62.
		The TARGET-HIGH VOLTS-HOT indicator light illuminates in 5 minutes $\pm$ 15 seconds.	Refer to figure 63
e	Set the MISSILE POWER switch to ON.	The MISSILE-HIGH VOLTS-PREHEAT indicator light illuminates.	Refer to figure 32.
		Three MISSILE-350V fuse indicator lights on the fuse panel illuminate.	Refer to figure 24.
		The MISSILE-PLATE VOLTS-READY indicator light illuminates within 20 to 30 seconds.	Adjust variable resistor R11 on the MTR 20-30-second delay timer. Refer to figure 81
		The MISSILE-HIGH VOLTS-HOT indicator light illuminates in 5 minutes $\pm$ 15 seconds.	Refer to figure 32

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(U) Table 3-1 Dolly Power Checks—Continued

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Step	Operation	Normal indication	Corrective procedure
3.	Continued		
	f. Set the TARGET-PLATE VOLTS switch to on (up)		
		The TARGET-PLATE VOLTS-READY indicator light extinguishes.	Refer to figure 62
		Three TARGET-350V fuse indicator lights extinguish.	Refer to figure 55
		The TARGET-PLATE VOLTS-ON and TARGET-HIGH VOLTS-READY indicator lights illuminate.	Refer to figures 55 and 63
		The HV SUPPLY READY indicator light on the target track control-power supply illuminates.	Refer to figure 63
	g. Set the MISSILE-PLATE VOLTS switch to on (up).		
		The MISSILE-PLATE VOLTS-READY indicator light extinguishes.	Refer to figure 31
		Three MISSILE-350V fuse indicator lights extinguish.	Refer to figure 24
		The MISSILE-PLATE VOLTS-ON and MISSILE-HIGH VOLTS-READY indicator lights illuminate.	Refer to figures 24 and 32
		The HV SUPPLY-READY indicator light on the missile track control-power supply illuminates.	Refer to figure 32.
	h. On the RSPU power supply assembly, insure that the power ON-OFF switch is set to ON		
	i. On the missile track and target track control-power supplies, set the IND HV switches to on (up)		
		The IND HV indicator lights on both control-power supplies illuminate	Refer to figure 27 (MTR) or 63 (TTR).
	Note All controls and indicators in step 4a and b below are located on the range radar power control indicator		
4.	Perform the ac power checks for the TRR.		
	a. Set the TRR POWER switch to ON		
		The HIGH VOLTAGE-PREHEAT indicator light illuminates.	Refer to figure 87.

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TU, Table 2-1. Daily Power Checks—Continued

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Step	Operation	Normal indication	Corrective procedure
4.	Continued	Three +350V POWER SUPPLY fuse indicator lights illuminate	Refer to figure 79.
		The PLATE VOLTAGE READY indicator light illuminates within 20 to 30 seconds.	Adjust variable resistor R11 on the TRR 20-30-second delay timer
			Refer to figure 86
		The HIGH VOLTAGE—HOT indicator light illuminates in 5 minutes + 15 seconds.	Refer to figure 87.
b.	Set the PLATE VOLTAGE switch to on (up).	The WAVEGUIDE PRESSURE indicator light illuminates after a short delay.	Perform the TRR procedures in table 2-2, steps 1b through 4.
			Refer to figure 87.
		The HIGH VOLTAGE—READY A and HIGH VOLTAGE—READY B indicators illuminate.	Refer to figure 87
		The PLATE VOLTAGE—READY and PLATE VOLTAGE—INTLK indicator lights extinguish.	Refer to figure 86.
		Three +350V POWER SUPPLY fuse indicator lights extinguish	Refer to figure 79.
		The PLATE VOLTAGE ON indicator light illuminates.	Refer to figure 86
c.	Observe the countermeasures control-indicator.	The MAG A—READY and MAG B—READY indicators illuminate.	Refer to figure 87.
5.	Perform the final radar line voltage check.		
a.	On the radar power control-indicator, set the PHASE switch to C and observe the LINE VOLTS meter.	The LINE VOLTS meter indicates 120 volts.	Adjust the ADJUST PHASE C knob
			Refer to figure 24
b.	Set the PHASE switch to B, then to A.		

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(U) Table 2-1. Daily Power Checks—Continued

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Step	Operation	Normal indication	Corrective procedure
5	Continued		
		The LINE VOLTS meter indicates within the limits of 117.5 and 127.5 volts at each switch position.	Refer to figure 24
a.	Set the PHASE switch to C		
d	On the range radar power control-indicator, set the LINE VOLTS SEL switch to $\phi C$	The LINE VOLTAGE meter indicates 120 volts when the tracking station group is operating with two motor alternators or engine alternators.	Adjust the ADJUST PHASE C knob.
			Refer to figure 79.
		The LINE VOLTAGE meter indicates within the limits of 117.5 and 127.5 volts when the tracking station group is operating with one motor alternator or engine alternator.	
			Refer to figure 79
e	Set the LINE VOLTS SEL switch to $\phi B$ , then to $\phi A$ .	The LINE VOLTAGE meter indicates within the limits of 117.5 and 127.5 volts at each switch position.	Refer to figure 79.
f.	Set the LINE VOLTS SEL switch to $\phi C$		
6	Perform the dc power checks for the TTR.		
a.	On the radar power control-indicator, set the VOLTS CHECK MISSILE switch to TARGET.		
b	Set the VOLTS CHECK-TARGET switch to the positions indicated, and observe that the VOLTS CHECK meter indications are in the segments specified below.		
	Note Check all positions of the VOLTS CHECK-TARGET switch before performing any adjustments. For any apparent malfunctions, refer to figures 58 and 59		
(1)	+1550	1/4	
(2)	-250	3/4	
(3)	-320	3/4	On the lower $\pm 320V$ , $+220V$ power supply in the lower left section of the radar power supply group, adjust the V ADJ SEC 2 ( - or + ) variable resistor
(4)	LVPS	1/4	Perform the procedures in table 5-30, step 2
(5)	+220T	3/4	
(6)	-250T	3/4	
(7)	T ANT	1 4	Perform the procedures in table 5-30, step 9 (TTR)

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(U) Table 2.1 Daily Power Checks—Continued

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Step	Operation	Normal indication	Corrective procedure
6.	Continued		
	(8)	+150T	3/4
	(9)	+250T	3/4
	(10)	+320T	3 4 On the upper +320V, +220V power supply in the lower left section of the radar power supply group, adjust the V ADJ SEC 1 ( + ) variable resistor
	(11)	+450	3, 4 On the +450V and +250V power supply, adjust the +450V ADJ variable resistor
	(12)	+270	1 2 (The indication shall not exceed 3/16 inch to the right of the white block.)
	(13)	-28A	1 4 *Move the secondary tap on transformer T1 in the -28V power supply on the slide in the upper right front of the radar power supply group. (Higher tap numbers produce higher voltages.)
	(14)	28C	1/4 *Move the secondary tap on transformer T1 in the 28V power supply on the slide in the upper left front of the TTR console. (Higher tap numbers produce higher voltages.)
	(15)	OFF	
7.	Perform the dc power checks for the MTR.		
a	On the radar power control indicator, set the VOLTS CHECK—MISSILE switch to the positions indicated, and observe that the VOLTS CHECK meter indications are in the segments specified below.		
	Note Check all positions of the VOLTS CHECK MISSILE switch before performing any adjustments. For any apparent malfunctions, refer to figure 28		
	(1)	-250	3/4
	(2)	-320	3/4 On the lower +320V, +220V power supply in the lower left section of the radar power supply group, adjust the V ADJ SEC 2 ( - or + ) variable resistor.
	(3)	LVPS	1/4 Perform the procedures in table 5-30, step 3
	(4)	+220M	3/4 On the lower +320V, +220V power supply in the lower left section of the radar power supply group, adjust the V ADJ SEC 1 ( + ) variable resistor

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(U) Table 2-1 Daily Power Checks--Continued

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Step	Operation	Normal indication	Corrective procedure
7	Continued		
	(5)	-250M	3/4
	(6)	M ANT	1/4 Perform the procedures in table 5-30, step 9 (MTR)
	(7)	+150M	3/4
	(8)	+250M	3/4
	(9)	+320M	3/4 On the upper +320V, +220V power supply in the lower left section of the radar power supply group, adjust the V ADJ SEC 2 ( - or + ) variable resistor
	(10)	+450	3/4 On the +450V and +250V power supply, adjust the +450V ADJ variable resistor.
	(11)	+270	1/2 (The indication shall not exceed 3/16 inch to the right of the white block.)

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(1) Table 2-1 Radar Power Checks Continued

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Step	Operation	Normal indication	Time	Procedure
7.	<b>Continued</b>			
	(12)	-28B	1/4	*Move the secondary tap on transformer T <sub>3</sub> in the 270V 28V and +75V or +175V power supply in the radar power supply group. Higher tap numbers produce higher voltages.)
	(13)	TARGET		
b	On the MTR and TTR RSPU front panels, set the MODE switches to MNL, then OPR			
	Fault LED's (decimal points at extreme left) on the coordinate displays are extinguished.			
				(1) In the director station, verify that the computer POWER switch is set to ON
				(2) Perform the procedures in table 3-5.
8.	<b>Perform the dc power checks for the TRR.</b>			
	On the range radar power control indicator set the VOLTS CHECK switch to the positions indicated, and observe that the VOLTS CHECK meter indications are in the segments specified below			
	<i>Note:</i> Check a 1 position of the VOLTS CHECK switch before performing any adjustments. For any apparent malfunctions, refer to figure 83			
a.	ANT	1/4		Perform the procedures in table 5-30, step 10
b.	+5	1/4		Perform the procedures in table 5-30, step 6
c.	-250	3/4		
d.	-320A	3/4		On the right power supply in the lower left section of the TRR control cabinet, adjust the V ADJ SEC 2 (- or +) variable resistor
e.	+150	3/4		
f.	+250	3/4		
g.	+220	3/4		On the right power supply in the lower left section of the TRR control cabinet, adjust the V ADJ SEC 1 (+) variable resistor
h.	-320B	3/4		On the left power supply in the lower left section of the TRR control cabinet, adjust the V ADJ SEC 2 (- or +) variable resistor

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1. Table 2-1 Daily Power Checks—Continued

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Step	Operation	Normal indication	Corrective procedure	
8.	<b>Continued</b>			
	i.	+320	3/4	On the left power supply in the lower left section of the TRR control cabinet, adjust the V ADJ SEC 1, +, variable resistor
	j.	28V/E	1/4	*Move the secondary tap on transformer T1 in the -28V power supply on the far left slide in the front of the TRR control cabinet. (Higher tap numbers produce higher voltages.)
	k.	+15V	1/4	Perform the procedures in table 5-30, step 6.
	l.	-15V	1/4	Perform the procedures in table 5-30, step 6.
	m.	OFF		

U1 Table 2-2 Daily Pressurization and Dehumidification Checks—TTR, MTR, and TRR

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Step	Operation	Normal indication	Corrective procedure
	Note: This procedure is applicable to the TTR, MTR, and TRR assuming the controls and indicators peculiar to each.		
1.	<b>Prepare for the pressurization and dehumidification checks.</b>		
	a.	Perform the procedures in table 2-1.	
	b.	At the TRR, MTR, or TTR antenna support base, set the ANTENNA switch to DISABLE.	
	c.	On the TRR, MTR, or TTR antenna pedestal, set the BLOWER switch to OFF.	
2.	<b>Check the pressurization unit.</b>		
	a.	On the compressor, insure that the power ON/OFF switch is set to ON.	
		The POWER indicator light is illuminated.	
		Refer to figure 16 (MTR).	
		Refer to figure 47 (TTR).	
		Refer to figure 73 (TRR).	
	b.	Observe one cycle of the pumping operation.	
		The motor operation (pumping) time does not exceed 4 minutes (TTR or MTR).	
		Refer to figure 16 (MTR).	
		Refer to figure 47 (TTR).	
		The motor operation (pumping) time does not exceed 2 minutes (TRR).	
		Refer to figure 73 (TRR).	

\*Omit this step if the checks in the preceding table have been performed in sequence.

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(U) Table 2-2 Daily Pressurization and Dehumidification Checks—TTR, MTR, and TRR Combined

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Step	Operation	Normal indication	Corrective procedure
2.	Continued	<p>The pressure meter indicates within the limits of 9 and 17 (MTR and TTR).</p> <p>The waveguide pressure meter in the receiver-transmitter indicates within the limits of 17 and 25 (TRR).</p>	<p>Perform the procedures in table 3-1, steps 1b and 2 (TTR and MTR).</p> <p>Perform the procedures in table 3-1, steps 1b and 3 (TRR).</p>
3.	Check the dehumidifier.		
	a. Observe the indicator lights on the dehumidifier	On the TTR and MTR, the 115V 400CY ON and the 28VDC-ON indicator lights are illuminated.	<p>Refer to figure 16 (MTR).</p> <p>Refer to figure 47 (TTR).</p>
	b. Observe the HUMIDITY INDICATOR.	The HUMIDITY INDICATOR is dark blue	Perform the procedures in table 8-1 (MTR, TTR, and TRR)
4.	Return the equipment to normal operation.		
	a. On the TRR, MTR, or TTR antenna pedestal, set the BLOWER switch to ON		
	b. On the TRR MTR, or TTR antenna support base, set the ANTENNA switch to NORMAL. <sup>2</sup>		

<sup>2</sup> Omit this step if the checks in the succeeding tables are to be performed in sequence

(U) Table 2-3. Daily Leveling Checks—TTR, MTR, and TRR

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Step	Operation	Normal indication	Corrective procedure
	<p>Note: This procedure is the same for TRR, MTR, and TTR using controls and indicators peculiar to each. This procedure is performed during a period of low temperature gradient (early morning). To obtain greater accuracy from the levels, approach all readings on the counter with the same direction of rotation on the level knobs. One man should take all readings for any one leveling operation.</p>		
1.	Perform the level check.		
	a. Perform the procedures in table 2-1. <sup>1</sup>		
	b. On the antenna support base, set the ANTENNA switch to DISABLE. <sup>1</sup>		
	c. Install the local antenna controls on the missile track and target track antennas or the antenna test set on the target range antenna, and set the CONTROL switch to ANT.		
	d. Set the ANTENNA switch to NORMAL.		
	e. Using the local antenna control, align a patch recess with the azimuth antirotational (transit) lock.		

<sup>1</sup> Omit this step if the checks in the preceding tables have been performed in sequence**CONFIDENTIAL**

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(U), Table 2-3 Daily Leveling Checks—TTR, MTR, and TRR—Continued

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Step	Operation	Normal Indications	Corrective Procedure
1.	<b>Continued</b>		
	f. Adjust the level knobs on levels A (right) and B (left) on each antenna until the split image of the bubble in each level is aligned.		
	g. Record the counter indications on each level. Designate the indications $A_1$ and $B_1$ .		
	h. Using the local antenna control, rotate the antenna 3,200 mils in azimuth.		
	i. Adjust the level knobs on levels A (right) and B (left) on each antenna until the split image of the bubble in each level is aligned.		
	j. Record the counter indications on each level. Designate the level dial indications $A_2$ and $B_2$ .		
	k. Perform the calculations in (1) and (2) below.		
	(1) $A_1 - A_2$ = difference		
	(2) $B_1 - B_2$ = difference		
	Each difference in (1) and (2) above is 5 divisions or less.		
			(a) On the antenna, adjust the level knob on each level so that the counters indicate halfway between the two indications of $A_1$ and $A_2$ and $B_1$ and $B_2$ .
			(b) Loosen the two jack-locking knobs and ascertain that the pins are free by pressing on the jack-locking knobs.
			(c) Adjust the leveling jacks on each antenna until the split image of the bubble in each level is aligned.
			(d) Using the local antenna controls, rotate the antenna 3,200 mils in azimuth.
			(e) Adjust the level knobs until the split image of the bubbles are aligned. The counter indication should not differ from the indication set in (a) above by more than 3 divisions; otherwise, repeat the procedures in (a) through (e) above.
			(f) Tighten the two jack locking knobs.
2.	<b>Return the antenna to normal operation.</b>		
	a. Set the ANTENNA switch to DISABLE.		
	b. Remove the local antenna controls from the TTR or MTR, or the antenna test set from the target range antenna.		
	c. Set the ANTENNA switch to NORMAL.		

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(U) Table 2-4. Daily Presentation Checks—TTR

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Step	Operation	Normal indication	Corrective procedure										
1.	Prepare for the TTR presentation checks.												
	a.	Perform the procedures in table 2-1.											
	b.	On the target track control power supply, set the switches as indicated.											
		<table border="0"> <thead> <tr> <th>Switch</th> <th>Setting</th> </tr> </thead> <tbody> <tr> <td>TTR PULSE WIDTH</td> <td>SHORT</td> </tr> <tr> <td>TTR PULSE WIDTH</td> <td>SHORT</td> </tr> <tr> <td>AGC-MANUAL</td> <td>AGC</td> </tr> <tr> <td>IND</td> <td>R</td> </tr> </tbody> </table>	Switch	Setting	TTR PULSE WIDTH	SHORT	TTR PULSE WIDTH	SHORT	AGC-MANUAL	AGC	IND	R	
Switch	Setting												
TTR PULSE WIDTH	SHORT												
TTR PULSE WIDTH	SHORT												
AGC-MANUAL	AGC												
IND	R												
	c.	On the target antenna control group, set the AGC-LIN LOG switch to AGC.											
	d.	Set the TTR range to approximately 20,000 yards.											
	e.	On the elevation, azimuth, and range indicators, rotate the SWEEP LENGTH controls fully counterclockwise.											
	f.	On the range radar power control-indicator, verify that the TEST-OPERATE switch is set to OPERATE.											
2.	Check the elevation, azimuth, and range indicators.												
	a.	Observe the upper sweeps on the elevation, azimuth, and range indicators.											
		The presentations are focused and well defined.											
			(1) On the indicators, adjust the INTENSITY and FOCUS controls.										
			(2) On the target sweep generator, adjust the ASTIGMA TISM control. Readjust the FOCUS control if necessary. Refer to figure 51.										
		Receiver noise is present.											
			Perform the procedures in table 2-9, steps 1 through 3a.										
		The expanded area of the sweep and the short pulse range notch are approximately centered in the middle of the sweep.											
			Perform the procedures in table 5-10.										
		The sweep lengths are approximately 4 inches long.											
			Perform the procedures in table 6-10.										
	b.	Observe the lower sweep of the elevation and azimuth indicators.											
		A sweep is present and is approximately 1-1/2 inches below the upper sweep.											
			Perform the procedures in table 6-10.										

<sup>1</sup> Omit this step if the checks in the preceding tables have been performed in sequence.

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TM B-1430 1256-12-1

(U) Table 2-6. Daily Transmitter Checks-TTR

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Step	Operation	Normal Indication	Corrective procedure
1.	Prepare for the TTR transmitter checks.		
	<i>Note</i> Whenever the target rack control power supply has been replaced, rotate all six variable resistors on the top panel of the target track control power supply fully clockwise to prevent damaging the magnetron.		

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2-12.1/(2-12.2 blank)

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TM 9-1430-1256-12-1

(U) Table 2-6 Daily Transmitter Checks—TTR—Continued

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Step	Operation	Normal indication	Corrective procedure
1.	<b>Continued</b>		
	a. Perform the procedures in table 2-1 <sup>1</sup>		
	b. Have the LOPAR operator energize the LOPAR as prescribed in the power checks in TM 9-1430-1256-12-1 and set the LOPAR—HIPAR AAR switch to LOPAR.		
	<i>Note:</i> All controls and indicators in steps 2 through 5 below are located on the target track control-power supply unless otherwise indicated.		
2.	<b>Check the operation of the magnetron.</b>		
	a. Set the TTR PULSE WIDTH switch to SHORT. Operate the FREQUENCY switch to obtain a midscale reading on the FREQUENCY meter.		
	b. On the target antenna control group, insure that the MULTIBIN switch is set to OFF and depress the MP switch.		
	<b>The MP—ON indicator light on the pulse generator-indicator illuminates.</b>		
			Refer to figure 66.
	c. Rotate the HV SUPPLY knob to START and depress the HV SUPPLY ON switch.		
	<b>The HV SUPPLY—READY indicator light extinguishes, and the HV SUPPLY—ON indicator light illuminates.</b>		
			Refer to figure 63.
	<b>On the radar power control indicator, the TARGET—HIGH VOLTS—PREHEAT, HOT, and READY, and TARGET—INTLK indicator lights extinguish.</b>		
			Refer to figure 63.
	<b>The TARGET—HIGH VOLTS—ON indicator light on the radar power control-indicator illuminates.</b>		
			Refer to figure 63.
	d. Adjust the HV SUPPLY knob to obtain an indication in the center of the white block on the MAGNETRON meter.		
	<b>The MAGNETRON meter indicates in the center of the white block.</b>		
			Perform the procedures in table 5-14. Check the magnetron HV power supply diodes.
			Refer to figure 63.
	e. Operate the MAGNETRON switch to KV FS = 20.		
	<b>The MAGNETRON meter indicates between 11 and 16 kv.</b>		
			Perform the procedures in table 5-14.
			Refer to figure 47.
	f. Operate the MAGNETRON switch to MA FS = 100.		

<sup>1</sup>Omit this step if the checks in the preceding tables have been performed in sequence.**CONFIDENTIAL**

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(U, Table 2-5. Daily Transmitter Checks—TTR—Continued)

**UNCLASSIFIED**

Step	Operation	Normal indication	Corrective procedure
2.	Continued		
		The MAGNETRON meter indicates between 60 and 72 ma.	Perform the procedures in table 5-14. Refer to figure 47
g	On the target antenna control group, depress the MP switch.	The MP—ON indicator light extinguishes, and the MP—OFF indicator light illuminates.	Refer to figure 65
		The MAGNETRON meter indicates in the center of the white block.	Adjust variable transformer T4 located on the right side of the target track control-power supply. Refer to figure 63.
h.	Operate the MAGNETRON switch to KV FS = 20.	The MAGNETRON meter indicates between 11 and 16 kv.	Refer to figure 47
i.	Operate the MAGNETRON switch to MA FS = 100.	The MAGNETRON meter indicates between 11 and 14 ma.	Refer to figure 47
j.	Set the TTR PULSE WIDTH switch to LONG	The MAGNETRON meter indicates near the center of the white block.	Adjust LP LP variable resistor (R22) on top of the target track control-power supply. Refer to figure 63.
k.	Operate the MAGNETRON switch to KV FS = 20.	The MAGNETRON meter indicates between 10 and 15 kv.	Refer to figure 47.
l.	Operate the MAGNETRON switch to MA FS = 100	The MAGNETRON meter indicates between 55 and 65 ma.	Refer to figure 47.
m	On the target antenna control group, depress the MP switch	The MP—OFF indicator light extinguishes, and the MP—ON indicator light illuminates.	Refer to figure 65.

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TM 9-1430-1256-12-1

UG Table 2-5. Daily Transmitter Checks-TTR-Continued

**UNCLASSIFIED**

Step	Operation	Normal indication	Corrective procedure
2.	Continued		
		The MAGNETRON meter indicates near the center of the white block	Adjust MP LP variable resistor (R17) on top of the target track control-power supply Refer to figure 63
	n. Operate the MAGNETRON switch to KV FS = 20	The MAGNETRON meter indicates between 10 and 15 kv	Refer to figure 47.
	o. Operate the MAGNETRON switch to MA FS = 100	The MAGNETRON meter indicates between 57 and 70 ma.	Perform the procedures in table 5-14. Refer to figures 47
	p. On the target antenna control group, depress the MP switch	The MP-OFF indicator light illuminates.	Refer to figure 65
3	Check the operation of the magnetron in range zero.		
	a. Set the TTR PULSE WIDTH switch to SHORT		
	b. On the target antenna control group, set the MULTIBIN switch to ZERO		
	c. On the target antenna control group, depress the MP switch	The MP-OFF indicator light extinguishes, and the MP-ON indicator light illuminates.	Refer to figure 65
		The MAGNETRON meter indicates near the center of the white block	Adjust MP RZ SP variable resistor (R14) on the top of the target track control-power supply Refer to figure 63
	d. Operate the MAGNETRON switch to KV FS = 20.	The MAGNETRON meter indicates between 11 and 16 kv.	Refer to figure 47
	e. Operate the MAGNETRON switch to MA FS = 100.	The MAGNETRON meter indicates between 9 and 12 ma.	Refer to figure 47.

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(U) Table 2-5 Daily Transmitter Checks-TTR-Continued

**UNCLASSIFIED**

Step	Operation	Normal indication	Corrective procedure
3.	Continued		
	f. Set the TTR PULSE WIDTH switch to LONG.	The MAGNETRON meter indicates near the center of the white block	Adjust MP RZ LP variable resistor (R15) on the top of the target track control-power supply Refer to figure 63
	g. Operate the MAGNETRON switch to KV FS = 20.	The MAGNETRON meter indicates between 10 and 15 kv	Refer to figure 47.
	h. Operate the MAGNETRON switch to MA FS = 100.	The MAGNETRON meter indicates between 47 and 55 ma.	Refer to figure 47
	i. On the target antenna control group, operate the MP switch	The MP-OFF indicator light illuminates.	Refer to figure 65
	j. Set the MULTI BIN switch to OFF.		
	Note On systems not equipped with HIPAR or if the HIPAR is inoperative, omit step 4 below		
4.	Check the operation of the magnetron in the HIPAR mode.		
	a. Verify that the HIPAR METER SHUNT switch on the remote magnetron control-indicator is set to the PRF of the site HIPAR.		
	b. Have the LOPAR operator set the LOPAR HIPAR, AAR switch to HIPAR, AAR		
	c. Set the TTR PULSE WIDTH switch to SHORT	The MAGNETRON meter indicates near the center of the white block	Adjust HP SP variable resistor (R19) on top of the target track control-power supply Refer to figure 63
	d. Operate the MAGNETRON switch to KV FS = 20.	The MAGNETRON meter indicates between 11 and 16 kv	Refer to figure 47.
	e. Operate the MAGNETRON switch to MA FS = 100	The MAGNETRON meter indicates between 9 and 12 ma.	Refer to figure 47.
	f. Set the TTR PULSE WIDTH switch to LONG		

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(U) Table 2-5. Daily Transmitter Checks-TTR-Continued

## UNCLASSIFIED

Step	Operation	Normal indication	Corrective procedure
4	Continued		
		The MAGNETRON meter indicates near the center of the white block	Adjust HP LP variable resistor (R20) on top of the target track control-power supply Refer to figure 63
g	Operate the MAGNETRON switch to KV FS = 20	The MAGNETRON meter indicates between 10 and 15 kv	Refer to figure 47
h	Operate the MAGNETRON switch to MA FS = 100	The MAGNETRON meter indicates between 47 and 55 ma.	Refer to figure 47
5.	Deenergize the TTR transmitter. <sup>1</sup> Rotate the HV SUPPLY knob to START and depress the HV SUPPLY-OFF switch		

<sup>1</sup>Omit this step if the checks in the succeeding tables are to be performed in sequence

(U) Table 2-6. Daily Target AFC Checks-TTR

## UNCLASSIFIED

Step	Operation	Normal indication	Corrective procedure
1.	Prepare for the target AFC checks.		
	a.	Perform the procedures in table 2-1. <sup>1</sup>	
	b.	On the target track control power supply, set the TTR PULSE WIDTH switch to SHORT and the IND switch to R	
	c.	On the target antenna control group, set the switches as indicated	
		Switch	Setting
		TEST	TEST
		AGC-LIN-LOG	AGC
		MULTI BIN	ZERO
	d.	Set the TTR range to less than 20,000 yards	
2.	Energize the TTR transmitter. <sup>1</sup>		
	On the target track control power supply, rotate the HV SUPPLY knob to START and depress the HV SUPPLY-ON switch. Adjust the HV SUPPLY knob to obtain an indication in the center of the MAGNETRON meter white block		
3.	Check target AFC operation.		
	Note: All controls and indicators are located on the target error voltage monitor unless otherwise indicated		
	a.	Set the (IF TEST)-ADJ switch to ADJ, the RCVR TEST switch to XTAL, and the BEACON-TARGET switch to TARGET	

Omit this step if the checks in the preceding tables have been performed in sequence

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U, Table 2-6. Daily Target AFC Checks TTR-Continued

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Step	Details	Normal condition	Corrective procedure
3	Continued		
	The RCVR TEST meter indicates between 30 and 100.		Perform the procedures in table 5-2.
b	Operate the BEACON TARGET switch to BEACON and then to TARGET. In the BEACON position, the TARGET AFC LOCK indicator is not illuminated. The TARGET AFC LOCK indicator illuminates within one second after the switch is set to TARGET.		Perform the procedures in table 5-1.
Note	While performing the procedures in the below ensure that there are video pulses present in the range notch.		
c	On the target track control-power supply, set the T-R PULSE WIDTH switch to LOCK. The TARGET AFC LOCK indicator remains illuminated.		Perform the procedures in table 5-1.
	Stable range zero pulses are present on the upper trace of the target range indicator.		Perform the procedures in table 5-1, steps 15 and 16.
	On the upper sweep of the elevation, azimuth, and range indicators, the transmitter pulse amplitude is between 1 and 1-1/4 inches.		Perform the procedures in table 5-10, <del>step 10 and 11</del> , STEPS 4.d and 4.e.
d	On the target track control-power supply, operate the FREQUENCY switch to vary the magnetron frequency over the entire range. The TARGET AFC LOCK indicator remains illuminated.		Perform the procedures in table 5-1.
e	Return the magnetron frequency to the assigned operating frequency. If no frequency is assigned, return the magnetron frequency to midscale.		
f	On the target antenna control group, set the MULTI BIN switch to OFF.		
g	Position the antenna to obtain video on the upper trace of the target range indicator.		
h	On the target track control-power supply, operate and hold the RF INTERRUPT switch. On the target track control-power supply, the MAGNETRON meter indication remains steady in the white block.		Refer to figure 65.

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(U, Table 2-6. Daily Target AFC Checks—TTR—Continued)

**UNCLASSIFIED**

Step	Description	Normal indication	Corrective procedure
3	Continued		
		The TARGET AFC LOCK indicator remains illuminated	Refer to figure 49
		The video on the upper sweep of the target range indicator disappears.	Refer to figure 65
	1. Release the RF INTERRUPT switch	The video reappears on the upper sweep of the range indicator	Refer to figure 65
4.	Deenergize the TTR transmitter.		
	On the target track control power supply rotate the HV SUPPLY knob to START and depress the HV SUPPLY-OFF switch		

(U, Table 2-7. Daily Beacon AFC Checks—TTR)

**UNCLASSIFIED**

Step	Description	Normal indication	Corrective procedure										
1	Prepare for the beacon AFC checks.												
	a. Perform the procedures in table 2-1												
	b. On the target antenna control group, set the switches as indicated												
	<table><tr><th>Switch</th><th>Setting</th></tr><tr><td>TEST</td><td>TEST</td></tr><tr><td>MULTI BIN</td><td>OFF</td></tr><tr><td>RANGE TRACK</td><td>TTR</td></tr><tr><td>AGC-LIN-LOG</td><td>AGC</td></tr></table>	Switch	Setting	TEST	TEST	MULTI BIN	OFF	RANGE TRACK	TTR	AGC-LIN-LOG	AGC		
Switch	Setting												
TEST	TEST												
MULTI BIN	OFF												
RANGE TRACK	TTR												
AGC-LIN-LOG	AGC												
	c. On the target test control, set the switches as indicated												
	<table><tr><th>Switch</th><th>Setting</th></tr><tr><td>SIGNAL LEVEL</td><td>00</td></tr><tr><td>FREQ SELECT</td><td>REMOTE</td></tr><tr><td>MODE</td><td>PULSE</td></tr><tr><td>PULSES</td><td>SINGLE</td></tr></table>	Switch	Setting	SIGNAL LEVEL	00	FREQ SELECT	REMOTE	MODE	PULSE	PULSES	SINGLE		
Switch	Setting												
SIGNAL LEVEL	00												
FREQ SELECT	REMOTE												
MODE	PULSE												
PULSES	SINGLE												
	d. On the target track control-power supply, set the switches as indicated												
	<table><tr><th>Switch</th><th>Setting</th></tr><tr><td>AGC-MANUAL</td><td>AGC</td></tr><tr><td>TTR PULSE WIDTH</td><td>SHORT</td></tr></table>	Switch	Setting	AGC-MANUAL	AGC	TTR PULSE WIDTH	SHORT						
Switch	Setting												
AGC-MANUAL	AGC												
TTR PULSE WIDTH	SHORT												

Omit this step if the checks in the preceding tables have been performed in sequence.

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(U) Table 2-7 Daily Beacon AFC Checks-TTR-Continued

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Step	Operation	Normal indication	Corrective procedure
1.	<b>Continued</b>		
	<i>e</i> On the target error voltage monitor, set the switches as indicated		
	<i>Switch</i>	<i>Setting</i>	
	(IF TEST)--ADJ	ADJ	
	RCVR TEST	BIAS	
	BEACON--TARGET	BEACON	
	PRESET	1	
	<i>f</i> On the IF test generator, verify that the OSC switch is set to OFF		
2.	<b>Acquire the radar test set.</b>		
	<i>a</i> On the target error voltage monitor, momentarily operate the SWEEP PRESET switch		
	The SWP CENTER indicator is illuminated.		
	Refer to figure 50.		
	<i>a.1</i> On the target track control-power supply, set the IND switch to A		
	<i>b.</i> Position the TTR antenna to the azimuth and elevation coordinates of the radar test set.		
	<i>Note</i> All switches, controls, and meters are located on the target error voltage monitor unless otherwise indicated		
	<i>c.</i> On the missile control indicator group, set the TARGET STANDBY--MISSILE switch to TARGET		
	<i>Note</i> The procedures in <i>c</i> through <i>h</i> below can be disregarded if the signal from the radar test set is visible on the range indicator		
	<i>d.</i> (Deleted)		
	<i>e.</i> On the target test control, set the MODE switch to CW		
	<i>f</i> Position the PRESET 1 COARSE control maximum clockwise Position the FINE control to approximately the middle of the adjustment range		
	<i>g</i> Slowly adjust the PRESET 1 COARSE control counterclockwise while observing the RCVR TEST meter for a bias voltage increase Adjust the control for near maximum bias voltage		
	<i>h.</i> On the target test control, set the MODE switch to PULSE		
	The pulse from the radar test set is visible on the range indicator.		
	Refer to figure 50		
	<i>i</i> Set the TTR range to within 8,000 yards of the range of the radar test set		
	<i>j.</i> On the target track control-power supply, set the IND switch to R		
	<i>k</i> On the target antenna control group, set the MULTI BIN switch to ON and the range MAN ACQUIRE AID--TRACK AID-- AUTO switch to ACQUIRE AID		

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(U) Table 2-7 Daily Beacon AFC Checks-TTR-Continued

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Step	Operation	Normal indication	Corrective procedure
2.	Continued		
		The pulse from the radar test set is centered in the range notch.	Perform the procedures in table 5-3, and repeat the procedures in steps 1 and 2a through 4 above
			Refer to figure 54.4
	i Set the RCVR TEST switch to AFC and adjust the PRESET 1 COARSE control to obtain an indication between 45 and 55 on the RCVR TEST meter		
	m Hold the AFC SENS switch in the HI position and slowly adjust the FINE control for an indication of 50 on the RCVR TEST meter		
	<i>Note</i> If the adjustment range of the FINE control is insufficient position the control to midrange and readjust the PRESET 1 COARSE control		
	a Release the AFC SENS switch		
3.	Beacon AFC operation checks.		
	a. Observe the range indicator	A stable radar test set short pulse signal is centered in the range notch	Perform the procedures in table 4-4.
	b. Observe the AFC LOCK indicators	The BEACON indicator is illuminated	Refer to figure 50
	c On the target track control-power supply, set the TTR PULSE WIDTH switch to LONG		
	d Hold the AFC SENS switch in the HI position and slowly adjust the FINE control to obtain an indication of 50 on the RCVR TEST meter Release the switch	A stable radar test set long pulse signal is present on the range indicator. The pulse is centered in the range notch.	Perform the procedures in table 4-4
4.	Reestablish the switch positions.		
	a. On the target antenna control group, set the MULTI BIN switch to OFF and the range MAN ACQUIRE AID TRACK AID--AUTO switch to MAN		
	b On the missile control-indicator group, set the TARGET STANDBY MISSILE switch to STANDBY		

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(U) Table 2-7 Daily Beacon AFC Checks-TTR-Continued

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Step	Operation	Normal indication	Corrective procedure
4.	Continued		
	c.	On the target test control, set the SIGNAL LEVEL switch to 70	
	d.	On the error voltage monitor set the BEACON TARGET switch to TARGET	

(U) Table 2-8. Daily Range System Checks TTR

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Step	Operation	Normal indication	Corrective procedure										
1.	Prepare for the TTR range system checks.												
	a. Perform the procedures in table 2-1												
	b. On the target antenna control group, set the switches as indicated												
		<table> <tr> <th>Switch</th><th>Setting</th></tr> <tr> <td>TEST</td><td>TEST</td></tr> <tr> <td>RANGE TRACK</td><td>TTR</td></tr> <tr> <td>AGC-LIN LOG</td><td>AGC</td></tr> <tr> <td>MULTI BIN</td><td>OFF</td></tr> </table>	Switch	Setting	TEST	TEST	RANGE TRACK	TTR	AGC-LIN LOG	AGC	MULTI BIN	OFF	
Switch	Setting												
TEST	TEST												
RANGE TRACK	TTR												
AGC-LIN LOG	AGC												
MULTI BIN	OFF												
	c. On the target track control power supply, set the switches as indicated												
		<table> <tr> <th>Switch</th><th>Setting</th></tr> <tr> <td>AGC-MANUAL</td><td>AGC</td></tr> <tr> <td>TTR PULSE WIDTH</td><td>SHORT</td></tr> <tr> <td>IND</td><td>R</td></tr> </table>	Switch	Setting	AGC-MANUAL	AGC	TTR PULSE WIDTH	SHORT	IND	R			
Switch	Setting												
AGC-MANUAL	AGC												
TTR PULSE WIDTH	SHORT												
IND	R												
	d. On the target error voltage monitor set the BEACON TARGET switch to TARGET												
	e. On the TTR RSPU set the COORD SELECT switch to D-FCN												
2.	Check the range gate operation												
	a. On the target antenna control group, operate the SLEW switch to slew the range from 0 to 200,000 yards												
		The expanded area of the sweep and the range notch on the elevation, azimuth, and range indicators move smoothly from 0 to 20,000 yards.											
		Refer to figure 54.4											
		The expanded area of the sweep and the range notch remain stable on the range indicator throughout the entire 20,000 to 200,000 yards.											
		Refer to figure 54.4											
	a. 1 On the target track control power supply, set the IND switch to A												
		The sweep extends 1/4 inch beyond the expanded area. RANGE NOTCH											
	a. 2 On the target track control power supply, set the IND switch to R.												

\* On this step if the checks in the preceding tables have been performed in sequence

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(U) Table 2-8. Daily Range System Checks—TTR—Continued

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Step	Operation	Normal indication	Corrective procedure
2.	Continued		<p>(1) On the target sweep generator in the target range indicator, adjust the MAX SWEEP RANGE control.</p> <p>(2) Refer to figure 51</p>
	b. Operate the SLEW switch to set the range to approximately 20,000 yards.		
3.	Energize the transmitter in the short pulse mode.		
	a. On the target track control-power supply, rotate the HV SUPPLY knob to START and depress the HV SUPPLY ON switch		
	b. Adjust the HV SUPPLY knob to obtain an indication in the center of the MAGNETRON meter white block and note the indication on the FREQUENCY meter		
	<i>Note</i> The same method of performing the range zero procedures (known datum point (KDP) or range zero pulse method) must be used for the TTR MTR, and TRR. The methods must not be intermixed.		
4.	Check the TTR range zero in the short pulse mode using a KDP.		
	<i>Note.</i> If a surveyed KDP is not available, proceed to step 8 below		
	a. Position the TTR antennas to the coordinates of the KDP		
	b. By varying the TTR range, center the KDP signal in the range notch.		
	c. On the target antenna control group, set the range MAN ACQUIRE AID-TRACK AID-AUTO switch to AUTO. Set the elevation and azimuth MAN-AID-AUTO switches to AUTO.		
	The elevation and azimuth coordinates and range indication are stable.		
	Select a different KDP		
	The RSPU COORD DISPLAY indicates the surveyed range to the KDP		
	On the TTR RSPU, adjust the SHORT PULSE DELAY thumbwheel switches and momentarily depress the ENTER switch until the KDP range is indicated. Record the SHORT PULSE DELAY thumbwheel switch settings		
5.	Check the TTR range zero in the long pulse mode using a KDP.		
	a. On the target track control-power supply, set the TTR PULSE WIDTH switch to LONG		
	The MAGNETRON meter indication is in the center of the white block.		
	Adjust the HV SUPPLY knob on the target track control-power supply.		
	The elevation and azimuth coordinates and range indication are stable.		
	Select a different KDP		

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(U) Table 2-8 Daily Range System Checks -TTR- Continued

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Step	Operation	Normal indication	Corrective procedure								
5.	Continued		<p>The RSPU COORD DISPLAY indicates the surveyed range to the KDP</p> <p>On the TTR RSPU, adjust the LONG PULSE DELAY thumbwheel switches and momentarily depress the ENTER switch until the KDP range is indicated. Record the LONG PULSE DELAY thumbwheel switch settings.</p> <p>b On the target antenna control group, set the elevation and azimuth MAN AUTO switches to MAN and the range MAN-ACQUIRE ALSO TRACK AID AUTO switch to MAN.</p>								
6.	Check the range zero in the MP short pulse mode		<p>a On the target track control power supply, set the TTR PULSE WIDTH switch to SHORT</p> <p>b On the pulse generator-indicator, set the switches as indicated</p> <table><tr><th>Switch</th><th>Setting</th></tr><tr><td>NO. 1 RUN-STOP</td><td>RUN</td></tr><tr><td>PRE-KNOCK</td><td>NORM</td></tr><tr><td>JITTER-1-2-3</td><td>JITTER</td></tr></table>	Switch	Setting	NO. 1 RUN-STOP	RUN	PRE-KNOCK	NORM	JITTER-1-2-3	JITTER
Switch	Setting										
NO. 1 RUN-STOP	RUN										
PRE-KNOCK	NORM										
JITTER-1-2-3	JITTER										

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(U) Table 2-8 Daily Range System Checks—TTR Continued  
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Step	Operation	Normal indication	Corrective procedure
6.	Continued		
	c. On the target antenna control group, set the MULTI BIN switch to ZERO and depress the MP switch.	<p>The MAGNETRON meter indicates in the center of the white block.</p> <p>The MP—ON indicator on the pulse generator-indicator illuminates.</p> <p>At least 15 stable range zero pulses are present on the range indicator.</p>	<p>Adjust the HV SUPPLY knob on the target track control-power supply.</p> <p>Refer to figure 65.</p> <p>Perform the procedures in table 2-6.</p>
	d. Set the TTR range to center the eighth range zero pulse in the range notch.		
	e. Set the range MAN—ACQUIRE AID—TRACK AID—AUTO switch to AUTO. Note and record the indication on the RSPU COORD DISPLAY. Designate this indication as $D_2$ .		
	f. Set the range MAN—ACQUIRE AID—TRACK AID—AUTO switch to MAN.		
	g. Set the TTR range to center the fourth range zero pulse in the range notch.		
	h. Set the range MAN—ACQUIRE AID—TRACK AID—AUTO switch to AUTO. Note and record the indication on the RSPU COORD DISPLAY. Designate this indication as $D_1$ .		
	i. Subtract $D_1$ from $D_2$ . Record the range difference.	$D_1$ equals the range difference.	Adjust R2 on the preknock generator located in the pulse generator-indicator. If R2 adjustment range is insufficient, perform the procedures in table 5-7, steps 2 through 6.
7.	Check the range zero in the MP long pulse mode.		
	a. On the target track control-power supply, set the TTR PULSE WIDTH switch to LONG.	<p>At least 15 stable range zero pulses are present on the range indicator.</p> <p>The TTR is still locked on the fourth range zero pulse.</p> <p>The RSPU COORD DISPLAY indicates the range difference recorded in step 6i above.</p>	<p>Perform the procedures in table 2-6.</p> <p>Reacquire the fourth range zero pulse.</p> <p>Adjust R5 on the preknock generator located in the pulse generator-indicator. If the R5 adjustment range is insufficient,</p>

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(U) Table 2-9. Daily Range System Checks: TTR (Continued)

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Step	Operation	Status Indication	Reference
7.	Continued		
			perform the procedures in table 5-7, steps 2 through 6
	h On the target antenna control group, depress the MP switch	The MP-OFF indicator on the pulse generator indicator illuminates.	
			Refer to figure 65
	Note Proceed to step 12 once the TTR range zero was established using a RDP		
8	Check the TTR range zero in the short pulse mode using the range zero pulses		
	a On the target antenna control group, set the MULTIPLY switch to ZERO	At least 15 stable range zero pulses are present on the range indicator	
			Perform the procedures in table 2-6
	b Set the TTR range to center the eighth range zero pulse in the range notch		
	c Set the range MAN ACQUIRE AID TRACK AID AUTO switch to AUTO. Note and record the indication on the RSPU COORD DISPLAY. Designate this range indication as $D_2$		
	d Set the range MAN ACQUIRE AID TRACK AID AUTO switch to MAN		
	e Set the TTR range to center the fourth range zero pulse in the range notch		
	f Set the range MAN ACQUIRE AID TRACK AID AUTO switch to AUTO. Note and record the indication on the RSPU COORD DISPLAY. Designate this range indication as $D_1$		
	g Subtract $D_1$ from $D_2$ . Record the range difference.		
		$D_2$ equals the range difference.	
			On the TTR RSPU, adjust the SHORT PULSE DELAY thumbwheel switches and momentarily depress the ENTER switch until the value indicated on the COORD DISPLAY equals the range difference. Record the SHORT PULSE DELAY thumbwheel switch settings.
9	Check the TTR range zero in the long pulse mode using the range zero pulses.		
	On the target track control-power supply, set the TTR PULSE WIDTH switch to LONG		
		The MAGNETRON meter indicates in the center of the white block.	
			Adjust the HV SUPPLY knob on the control-power supply
		At least 15 stable range zero pulses are present on the range indicator.	
			Perform the procedures in table 2-6
		The TTR is still locked on the fourth range zero pulse.	
			Reacquire the fourth range zero pulse

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(U) Table 2-8. Daily Range System Checks-TTR-Continued

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Step	Operation	Normal Indication	Corrective procedure								
9.	Continued	The TTR RSPU COORD DISPLAY indicates the range difference recorded in step 8g above.	On the TTR RSPU, adjust the LONG PULSE DELAY thumbwheel switches and momentarily depress the ENTER switch until the range difference recorded in step 8g above is indicated. Record the LONG PULSE DELAY thumbwheel switch settings.								
10.	Check the range zero in the MP long pulse mode.										
a	On the pulse generator-indicator, set the switches as indicated.	<table><tr><th>Switch</th><th>Setting</th></tr><tr><td>NO. 1 RUN-STOP</td><td>RUN</td></tr><tr><td>PRE-KNOCK</td><td>NORMAL</td></tr><tr><td>JITTER-1-2-3</td><td>JITTER</td></tr></table>	Switch	Setting	NO. 1 RUN-STOP	RUN	PRE-KNOCK	NORMAL	JITTER-1-2-3	JITTER	
Switch	Setting										
NO. 1 RUN-STOP	RUN										
PRE-KNOCK	NORMAL										
JITTER-1-2-3	JITTER										
b	On the target antenna control group, depress the MP switch.	<p>The MAGNETRON meter indicates in the center of the white block.</p> <p>Adjust the HV SUPPLY knob on the target track control-power supply.</p> <p>The MP-ON indicator on the pulse generator-indicator illuminates.</p> <p>Refer to figure 65</p> <p>The TTR is still locked on the fourth range zero pulse.</p> <p>Reacquire the fourth range zero pulse.</p> <p>The TTR RSPU COORD DISPLAY indicates the range difference recorded in step 8g above.</p> <p>Adjust R6 on the preknock generator located in the pulse generator-indicator. If the R5 adjustment range is insufficient, perform the procedures in table 5-7, steps 2 through 6.</p>									
11.	Check the range zero in the MP short pulse mode.										
a	On the target track control-power supply, set the TTR PULSE WIDTH switch to SHORT	<p>The MAGNETRON meter indicates in the center of the white block.</p> <p>Adjust the HV SUPPLY knob on the target track control-power supply.</p> <p>The TTR is still locked on the fourth range zero pulse.</p> <p>Reacquire the fourth range zero pulse</p>									

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(U) Table 2-8. Daily Range System Checks-TTR-Continued

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Step	Operation	Normal indication	Corrective procedure
11.	Continued	The TTR RSPU COORD DISPLAY indicates the range difference recorded in step 8g above.	Adjust R2 on the preknock generator located in the pulse generator-indicator. If the R2 adjustment range is insufficient, perform the procedures in table 5-7, steps 2 through 6.
	b. On the target antenna control group, depress the MP switch.	The MP-OFF indicator on the pulse generator-indicator illuminates.	Refer to figure 65.
12.	Check the range shift due to switching the pulse modes.		
	a. Set the range MAN ACQ (RE AID-TRACK AID-AUTO) switch to MAN and note the exact range on the RSPU COORD DISPLAY.		
	b. On the target track control-power supply, set the TTR PULSE WIDTH switch to LONG.	The range indication on the RSPU changes less than 15 yards from the noted indication in a above.	Set the TTR PULSE WIDTH switch to SHORT and perform the procedures in table 5-7, steps 5 and 6.
13.	Reestablish the switch positions.		
	On the target antenna control group, set the MULTI BIN switch to OFF.		
14.	Deenergize the TTR transmitter.		
	Rotate the HV SUPPLY knob to START and depress the HV SUPPLY OFF switch.		

(U) Table 2-9. Daily Monopulse Receiver Checks-TTR

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Step	Operation	Normal indication	Corrective procedure
	<i>Note</i> To minimize RF interference insure that the MTR and TTR antennas are not simultaneously aimed at the radar test set mast or other common object.		
1.	Prepare for the monopulse receiver checks.		
	a. Perform the procedures in table 2-1. <sup>1</sup>		
	b. On the target antenna control group, set the switches as indicated		
	<i>Switch</i>	<i>Setting</i>	
	TEST	TEST	
	MULTI BIN	OFF	
	RANGE TRACK	TTR	
	AGC-LIN-LOG	AGC	

<sup>1</sup> Only if this step of the checks in the procedure tables have been performed in sequence.**CONFIDENTIAL**

(U) Table 2-9. Daily Monopulse Receiver Checks—TTR—Continued

**UNCLASSIFIED**

Step	Operation	Normal indication	Corrective procedure
1.	<b>Continued</b>		
	c. On the target test control, set the switches as indicated:		
	Switch	Setting	
	SIGNAL LEVEL	00	
	FREQ SELECT	REMOTE	
	MODE	PULSE	
	PULSES	SINGLE	
	d. On the target track control-power supply, set the switches as indicated.		
	Switch	Setting	
	AGC—MANUAL	AGC	
	TTR PULSE WIDTH	LONG	
	IND	R	
	e. On the target error voltage monitor, set the switches as indicated.		
	Switch	Setting	
	(IF TEST)—ADJ	ADJ	
	RCVR TEST	BIAS	
	BEACON—TARGET	BEACON	
	PRESET	1	
	VID MON	SUM	
	f. Momentarily operate the SWEEP PRESET switch.		
	The SWEEP CENTER indicator is illuminated.		Refer to figure 50.
	g. On the missile control-indicator group, verify that the TARGET—STANDBY—MISSILE switch is set to STANDBY		
	h. On the IF test generator, verify that the OSC switch is set to OFF		
2.	<b>Check the performance of the monopulse receiver on receiver noise signals.</b>		
	Note All switches and meters are located on the target error voltage monitor unless otherwise indicated.		
	a. Observe the RCVR TEST meter		
	The average indication is between 0 and 10.		(1) Verify that the radar test set is not selected.
			(2) Perform the procedures in table 4-6.
	b. Set the (IF TEST)—ADJ switch to (IF TEST) and the RCVR TEST switch to (SUM).		
	The average indication on the RCVR TEST meter is between 40 and 60.		Perform the procedures in table 4-6.
	c. Set the RCVR TEST switch to (AZ).		
	The average indication on the RCVR TEST meter is between 25 and 100.		Perform the procedures in table 4-6.

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(U) Table 2-9 Daily Monopulse Receiver Checks-TTR-Continued

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Step	Operation	Normal indication	Corrective procedure
2.	Continued		
	d. Set the RCVR TEST switch to (EL).	The average indication on the RCVR TEST meter is between 25 and 100	Perform the procedures in table 4-6
3.	Prepare to acquire the radar test set.		
	a. On the target track control-power supply, set the TTR PL LSE WIDTH switch to SHORT		
	b. On the target error voltage monitor set the (IF TEST)-ADJ switch to ADJ and the RCVR TEST switch to BIAS.		
4	Acquire and lock on the radar test set signal in the long pulse mode.		
* a	Perform the procedures in table 2-7, steps 2 and 3		
* b	On the target antenna control group, set the range MAN ACQUIRE AID-TRACK AID-AUTO switch to AUTO		
	c. On the target antenna control group, set the elevation and azimuth MAN AID AUTO switches to AUTO		
	The radar test signal is stable and centered in the range notch.		(1) Repeat step 4 (2) Perform the procedures in table 2-10
	d. Note and record the range, elevation and azimuth LED position data Set the elevation, azimuth, and range switches to MAN		Perform the MAN servo balance procedures in table 4-8, step 2, 5, or 6 as required.
	The elevation, azimuth, and range displays are stationary		
	Note Care should be taken to keep the elevation, azimuth, and range LED position data at the same indication as noted for the lock-on position.		
5.	Prepare the target test adapter for the monopulse receiver sensitivity check.		
	a. Connect a coaxial cable between CP1-A T VIDEO TEST (located on the target side of the signal distribution panel in the radar set group) and the target error voltage monitor VID MON J4 coaxial jack		
	b. On the target test adapter, set the MEAS-CAL switch to MEAS and the AMP ON-OFF switch to ON		
	c. Set the TEST IND switch (S23) to ON		
	A radar test set signal with an amplitude of approximately 3/4 of an inch is present on the range indicator		On the test adapter, adjust the GAIN control and the setting of the ATTENUATOR VOLTAGE switch Refer to figure 51

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(U) Table 2-9 Daily Monopulse Receiver Checks-TTR-Continued

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Step	Operation	Normal indication	Corrective procedure
5	Continued		
	Note: If the test signal indicates ringing, it may be necessary to add a tee connector and a 50 ohm termination at J1 on the target test adapter.		
	Note: All switches in steps 5 through 9 show are on the target test control unless otherwise indicated.		
6	Check the sum channel receiver sensitivity		
a	Set the PULSES switch to DOUBLE and the SIGNAL LEVEL switch to 10	Two radar test set signals appear on the range indicator. The signal amplitudes are approximately equal.	Perform the procedures in table 5-6
b	Increase the SIGNAL LEVEL switch indication until the first radar test set signal is barely discernible	The second pulse remains visible and does not disappear at any time	Perform the procedures in table 5-6
c	Record the SIGNAL LEVEL switch indication	The switch indication plus 2 db is equal to or greater than the computed receiver sensitivity figure.	(1) Perform the procedures in table 4-2. Repeat the procedures in table 2-9. (2) Perform the procedures in table 5-3. Repeat the procedures in table 2-9
	Note: The initial computed receiver sensitivity figure is obtained by performing the procedures in table 5-4		
7.	Check the azimuth channel receiver sensitivity		
a	Set the SIGNAL LEVEL switch to 00		
b	On the target error voltage monitor, set the VID MON switch to AZ		
c	Rotate the azimuth handwheel to position the antenna 10 mils greater than the radar test set coordinates noted in step 4d above.		
d	Increase the SIGNAL LEVEL switch indication until the first radar test signal is barely discernible		
e	Record the SIGNAL LEVEL switch indication	The switch indication plus 8 db is equal to or greater than the SIGNAL LEVEL switch indication recorded in step 6c above.	(1) Perform the procedures in table 4-2. Repeat the procedures in table 2-9. (2) Perform the procedures in table 5-3. Repeat the procedures in table 2-9
f	Rotate the azimuth handwheel to position the antenna to the radar test set coordinates noted in step 4d above		

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(U) Table 2-9. Daily Monopulse Receiver Checks-TTR-Continued

**UNCLASSIFIED**

Step	Operation	Normal indication	Corrective procedure
6.	Check the elevation channel receiver sensitivity. Repeat step 7 above, substituting EL for AZ and elevation for azimuth.		
9	Reestablish the switch positions and remove the coaxial cable.		
a.	Remove the coaxial cable added in step 5c above.		
b.	If a tee connector and termination were added in step 5c above, they should be disconnected at J1 on the test adapter.		
c.	On the target test control, set the SIGNAL LEVEL switch to 70 and the PULSES switch to SINGLE.		
d.	On the test adapter, set the AMP ON-OFF switch to OFF.		
e.	Set the TEST IND (S23) switch to OFF.		
f.	On the missile control-indicator group, set the TARGET STANDBY-MISSILE switch to STANDBY. <sup>2</sup>		

<sup>2</sup> Omit this step if the checks in the succeeding tables are to be performed in sequence.

(U) Table 2-10. Daily Tracking Servo Checks-TTR

**UNCLASSIFIED**

Step	Operation	Normal indication	Corrective procedure
1	Acquire the radar test set in the short pulse mode.		
a.	Perform the procedures in table 2-7, steps 1 and 2.		
b.	Observe the range indicator.	A stable short pulse radar test set signal is centered in the range notch.	Perform the procedures in table 4-4.
c.	On the target antenna control group, set the elevation and azimuth MAN-AID-AUTO switches to AUTO.	The signal is still present in the range notch.	Perform the procedures in table 5-11.

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(U) Table 2-10. Daily Tracking Servo Checks-TTR-Continued

## UNCLASSIFIED

Step	Operation	Normal indication	Corrective procedure
2.	Check the elevation and azimuth auto lock-on error.		
	a. On the target error voltage monitor, hold the EL SENS and AZ SENS switches in the HI position	Both meters indicate within one small division of zero.	Perform the procedures in table 5-11.
	b. Release the switches.		
	c. Note and record the elevation and azimuth LED position data. Set the elevation and azimuth MAN-AID-AUTO switches to MAN		
	Note Unless otherwise indicated in the following steps, the elevation and azimuth antenna positions should be at the LED indications noted above		
3.	Check the elevation servo sensitivity in the short pulse mode		
	a. Increase the antenna elevation position 5 mils from the lock-on position recorded in step 2c above	The EL ANGLE ERROR meter on the target error voltage monitor indicates between +4 and +6 mils.	(1) On the target error voltage monitor, adjust the EL GAIN control to obtain an indication of +5 mils on the EL ANGLE ERROR meter. (2) Perform the procedures in table 5-11.
	b. Decrease the antenna elevation position 5 mils from the lock-on position recorded in step 2c above.	The EL ANGLE ERROR meter indicates between -4 and -6 mils.	Repeat a above, including the corrective procedure in (1). Repeat b above.
4.	Check the elevation servo sensitivity in the long pulse mode.		
	a. On the target track control-power supply, set the TTR PULSE WIDTH switch to LONG		
	b. Increase the antenna elevation position 5 mils greater than the lock-on position recorded in step 2c above.	The EL ANGLE ERROR meter on the target error voltage monitor indicates between +4 and +6 mils.	(1) On the elevation servo error converter, adjust the LP TRIM control to obtain an indication of +5 mils on the EL ANGLE ERROR meter (2) Perform the procedures in table 5-11
	c. Decrease the antenna elevation position 5 mils from the lock-on position recorded in step 2c above.	The EL ANGLE ERROR meter indicates between -4 and -6 mils.	

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(U) Table 2 10 Daily Tracking Servo Checks—TTR Continued

**UNCLASSIFIED**

Step	Operation	Normal indication	Corrective procedure
4.	Continued		Repeat b above, including the corrective procedure in (1) Repeat c above
5.	Check the maximum elevation servo sensing error.		
	Decrease the antenna elevation position to obtain maximum error on the target error voltage monitor EL ANGLE ERROR meter		
	The indication on the EL ANGLE ERROR meter is -15 mils or greater.		Perform the procedures in table 5-11
	A negative error pip is present on the lower sweep of the elevation indicator		Refer to figure 48
6.	Check the antenna auto lock-on from maximum error		
	a While observing the elevation error signal on the lower sweep display, on the target antenna control group set the elevat on MAN—AID—AUTO switch to AUTO		
	The elevation LED indication changes to the elevation coordinate of the radar test set. The error signal decreases to zero with no more than one overshoot.		Perform the procedures in table 5-11
	b. On the target track control-power supply, set the TTR PULSE WIDTH switch to SHORT		
	c. Set the elevation MAN—AID—AUTO switch to MAN		
7.	Check the azimuth tracking servo.		
	Repeat steps 3 through 6 above, substituting AZ for EL and azimuth for elevation		
8.	Reestablish the switch positions.		
	a On the missile control-indicator group, set the TARGET—STANDBY MISSILE switch to STANDBY		
	b. On the target test control, set the SIGNAL LEVEL switch to 70		
	c On the target antenna control group, set the MULTI BIN switch to OFF and the range MAN ACQUIRE AID—TRACK AID—AUTO switch to MAN		
	d On the error voltage monitor, set the BEACON—TARGET switch to TARGET		

(U) Table 2 11 Daily Lin-Log Receiver Checks—TTR

**UNCLASSIFIED**

Step	Operation	Normal indication	Corrective procedure
1.	Prepare for the lin-log receiver checks.		
	a. Perform the procedures in table 2-1. <sup>1</sup>		

<sup>1</sup> Omit this step if the checks in the preceding tables have been performed in sequence**CONFIDENTIAL**

(U) Table 2-11 Daily Lin Log Receiver Checks—TTR Cont. next

**UNCLASSIFIED**

Step	Operation	Normal indication	Corrective procedure
1.	<b>Continued</b>		
	b On the target antenna control group, set the switches as indicated.		
	Switch	Setting	
	TEST	TEST	
	MULTI BIN	OFF	
	AGC—LIN-LOG	LIN LOG	
	c On the target track control-power supply, set the TTR PULSE WIDTH switch to SHORT		
	The amplitude of the receiver noise on the range indicator is between 1/4 and 1/2 inch.		
	Perform the procedures in table 4-10		
	d Set the TTR PULSE WIDTH switch to LONG		
	There is a change in the appearance of the receiver noise		
	Perform the procedures in table 4-10		
	The amplitude of the receiver noise is between 1/4 and 1/2 inch.		
	Perform the procedures in table 4-10.		
2.	<b>Reestablish the switch positions.</b>		
	On the target antenna control group, set the AGC LIN LOG switch to AGC		

(U) Table 2-12 Daily Presentation Checks—MTR

**UNCLASSIFIED**

Step	Operation	Normal indication	Corrective procedure
1.	<b>Prepare for the MTR presentation checks.</b>		
	a. Perform the procedures in table 2-1. <sup>1</sup>		
	b On the missile track control-power supply, set the AGC—MANUAL switch to AGC		
	c On the missile track control drawer set the TEST switch to TEST and the DISABLE switch to the down position		
	d. Verify that the MTR range is greater than 1,000 yards.		
	e On the MTR range indicator verify that the IMAGE SPACING switch is set to OFF and the SWEEP LENGTH control is fully counterclockwise.		
2.	<b>Check the range indicator</b>		
	Observe the range indicator		
	The presentation is focused and well defined.		
	(1) Adjust the INTENSITY and FOCUS controls.		

<sup>1</sup>Only this step if the checks in the preceding tables have been performed in sequence

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(U) Table 2-13 Daily Presentation Checks - MTR - Continued

**UNCLASSIFIED**

Step	Operation	Normal indication	Corrective procedure
2.	Continued		
			(2) On the missile sweep generator, adjust the ASTIGMA-TISM control. Readjust FOCUS control if necessary. Refer to figure 21
	Receiver noise is present.		Perform the procedures in table 2-17, steps 1 and 2
	The sweep is positioned approximately 1/2 inch below the center of the indicator		Perform the procedures in table 5-18
	The expanded area of the sweep is approximately 1/2 inch long.		Perform the procedures in table 5-18.
	The sweep length is approximately 4 inches long		Perform the procedures in table 5-18.

(U) Table 2-13 Daily Transmitter Checks - MTR

**UNCLASSIFIED**

Step	Operation	Normal indication	Corrective procedure
1.	Prepare for the MTR transmitter checks.		
	a. Perform the procedures in table 2-1 <sup>1</sup>		
	b. On the missile track control drawer, set the TEST switch to TEST <sup>1</sup>		
	c. On the missile error voltage monitor, set the BEACON—TARGET switch to BEACON		
	Note: The controls and indicators in steps 2 through 5 below are located on the missile track control power supply unless otherwise indicated.		
2.	Check the operation of the magnetron in the beacon mode.		
	a. Rotate the HV SUPPLY knob to START and depress the HV SUPPLY—ON switch		
	The HV SUPPLY—READY indicator light extinguishes, and the HV SUPPLY—ON indicator light illuminates.		
			Refer to figure 32
	On the radar power control indicator, the MISSILE—HIGH VOLTS—PREHEAT, HOT, and READY and the MISSILE—INTLK indicator lights extinguish.		
			Refer to figure 32

<sup>1</sup>Omit this step if the checks in the preceding table have been performed in sequence.**CONFIDENTIAL**

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(U) Table 2-13. Daily Transmitter Checks—MTR—Continued

**UNCLASSIFIED**

Step	Operation	Normal Indication	Corrective procedure
2.	Continued		
		<b>The MISSILE HIGH VOLTS -ON indicator light on the radar power control-indicator illuminates.</b>	Refer to figure 32.
	b. Adjust the HV SUPPLY knob to obtain an indication of 10 ma on the MAGNETRON meter	<b>The MAGNETRON meter indicates a value of 10 ma.</b>	Perform the procedures in table 5-21
	c. Operate the MAGNETRON switch to KV FS=20.	<i>Note: The meter indication may oscillate slightly.</i>	
		<b>The MAGNETRON meter indicates a value between 10 and 14 kv.</b>	Perform the procedures in table 5-14
			Refer to figure 16.
	d. Operate the MAGNETRON switch to MA FS=100	<b>The MAGNETRON meter indicates a value between 35 and 50 ma.</b>	(1) Perform the procedures in table 2-20, steps 1 through 3. (2) Perform the procedures in table 5-14.
			Refer to figure 16.
3.	Check the operation of the magnetron in the target mode.		
	a. Rotate the HV SUPPLY knob to START		
	b. On the missile error voltage monitor set the BEACON TARGET switch to TARGET		
	c. Adjust the HV SUPPLY knob to obtain an indication of 3 ma on the MAGNETRON meter		
	d. Operate the MAGNETRON switch to KV FS=20	<b>The MAGNETRON meter indicates a value between 10 and 15 kv.</b>	Perform the procedures in table 5-14.
			Refer to figure 16.
	e. Operate the MAGNETRON switch to MA FS=100.	<b>The MAGNETRON meter indicates a value between 10 and 15 ma.</b>	Perform the procedures in table 5-14
			Refer to figure 16.
4.	Establish the operating frequency of the transmitter.		
	a. On the missile error voltage monitor, set the BEACON—TARGET switch to BEACON		

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(U) Table 2-13. Daily Transmitter Checks--MTR--Continued

**UNCLASSIFIED**

Step	Operation	Normal indication	Corrective procedure
4.	<b>Continued</b>		
	b Adjust the HV SUPPLY knob to obtain an indication of 10 ma on the MAGNETRON meter		
	<i>Note:</i> Omit c below if the OFF FREQ indicator is not illuminated		
	c Set the TUNE--SLEW switch to SLEW, and operate the FREQUENCY switch to set the magnetron to the frequency of the tuned cavity in use as indicated on the SLEW scale of the FREQUENCY meter.		
	d Set the TUNE--SLEW switch to TUNE.		
	e Operate the FREQUENCY switch until the pointer on the FREQUENCY meter indicates a null (dip) in the white segment of the TUNE scale		
	<b>The OFF FREQ indicator light extinguishes.</b>		
			Perform the procedures in table 5-15
5.	<b>Deenergize the MTR transmitter.</b>		
	Rotate the HV SUPPLY knob to START and depress the HV SUPPLY OFF switch.		

(U) Table 2-14. Daily Target AFC Checks: MTR

**UNCLASSIFIED**

Step	Operation	Normal indication	Corrective procedure
1.	<b>Prepare for the target AFC checks.</b>		
	a. Perform the procedures in table 2-1. <sup>1</sup>		
	b. On the missile error voltage monitor, set the BEACON TARGET switch to TARGET		
	c. On the missile track control drawer, set the switches as indicated:		
	Switch	Setting	
	TEST	TEST	
	DISABLE	down	
	RANGE	ZERO	
2.	<b>Energize the MTR transmitter.</b>		
	On the missile track control-power supply, rotate the HV SUPPLY knob to START and depress the HV SUPPLY ON switch. Adjust the HV SUPPLY knob to obtain an indication of 3 ma on the MAGNETRON meter		
3.	<b>Check the target AFC operation.</b>		
	<i>Note:</i> All controls and indicators are located on the missile error voltage monitor unless otherwise indicated.		
	a. Set the IF TEST--ADJ switch to ADJ and the RCVR TEST switch to XTAL.		
	<b>The RCVR TEST meter indicates between 15 and 75.</b>		
			Perform the procedures in table 4-14.

<sup>1</sup>Omit this step if the checks in the preceding tables have been performed in sequence**CONFIDENTIAL**

(U, Table 2-14. Daily Target AFC Checks—MTR—Continued)

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Step	Operation	Normal indication	Corrective procedure
3.	Continued		
	b. Operate the BEACON-TARGET switch to BEACON and then back to TARGET		
		In the BEACON position, the TARGET AFC LOCK indicator is not illuminated. The TARGET AFC LOCK indicator illuminates within one second after the switch is set to TARGET	
			Perform the procedures in table 5-1
		Stable range zero pulses are present on the range indicator.	
			Perform the procedures in table 5-1, steps 15 and 16
		On the range indicator, the magnetron transmitter pulse amplitude is between 1 and 1-1/4 inches.	
			(1) On the range indicator missile video amplifier, adjust the VIDEO GAIN control.
			(2) On the MTR RSPU, adjust R2 on A23
			(3) Refer to figure 21
4.	Deenergize the MTR transmitter.		
		On the missile track control power supply, rotate the HV SUPPLY knob to START and depress the HV SUPPLY OFF switch	
5.	Reestablish the switch positions.		
	a. On the missile track control drawer, set the RANGE switch to NORMAL.		
	b. Set the BEACON-TARGET switch to BEACON		

(U, Table 2-15. Daily Beacon AFC Checks—MTR)

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Step	Operation	Normal indication	Corrective procedure
1.	Prepare for the beacon AFC checks.		
	a. Perform the procedures in table 2-1. <sup>1</sup>		
	b. On the missile track control drawer set the switches as indicated		
	Switch	Setting	
	TEST	TEST	
	DISABLE	down	
	RANGE	NORMAL	

<sup>1</sup>Omit this step if the checks in the preceding tables have been performed in sequence

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*(U) Table 2-15 Daily Beacon AFC Checks- MTR-Continued***UNCLASSIFIED**

Step

Operation

Normal indication

Corrective procedure

1

Continued

c

On the missile control indicator group, set the switches as indicated

Switch	Setting
TARGET-STANDBY-MISSILE	MISSILE
SIGNAL LEVEL	00
FREQ SELECT	REMOTE
MODE	PULSE
PULSES	SINGLE

d

On the missile track control power supply, set the AGC-MANUAL switch to AGC

e

On the missile error voltage monitor, set the switches as indicated

Switch	Setting
(IF TEST)-ADJ	ADJ
RCVR TEST	BIAS
BEACON-TARGET	BEACON
PRESET	1

f

On the IF test generator, verify that the OSC switch is set to OFF

2

Acquire the radar test set.

a

Momentarily operate the SWEEP PRESET switch

The SWEEP PRESET indicator is illuminated

Refer to figure 23

b

Position the missile antenna to the azimuth and elevation coordinates of the radar test set.

Note

All switches, controls, and meters are located on the missile error voltage monitor unless otherwise indicated

Note

The procedures in c through f below can be disregarded if the signal from the radar test set is visible on the range indicator

c

On the missile control indicator group, set the MODE switch to CW and verify that the TARGET-STANDBY-MISSILE switch is set to MISSILE

d

Position the PRESET 1 COARSE control, fully clockwise. Position the FINE control to approximately the middle of the adjustment range

e

Slowly adjust the PRESET 1 COARSE control counter-clockwise while observing the RCVR TEST meter for a bias voltage increase. Adjust the control for near maximum bias voltage

f

On the missile control indicator group, set the MODE switch to PULSE

The pulse from the radar test set is visible on the range indicator

Refer to figure 93.

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(U) Table 2-15. Daily Beacon APC Checks-MTR-Continued

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Step	Operation	Normal indication	Corrective procedure
2.	Continued		
	g. Set the MTR range to within 8,000 yards of the range of the radar test set.		
	h. On the missile track control drawer, set the DISABLE switch to DISABLE		
	The pulse from the radar test set is centered in the range notch		Perform the procedures in table 5-3, and repeat the procedures in steps 1 and 2a through h above.
			Refer to figure 21
	i. Set the RCVR TEST switch to AFC		
	j. Adjust the PRESET 1 COARSE control to obtain an indication between 45 and 55 on the RCVR TEST meter		
	k. Hold the AFC SENS switch in the HI position and slowly adjust the FINE control for an indication of 50 on the RCVR TEST meter. Release the switch		
	<i>Note:</i> If the adjustment range of the FINE control is insufficient, it will be necessary to position the control to midrange and readjust the PRESET 1 COARSE control		

(L; Table 2-15. Daily Beacon AFC Checks—MTR—Continued)

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Step	Operation	Normal indication	Corrective procedure
3.	Perform the beacon AFC operation checks.		
a	Observe the range indicator	A stable radar test set signal is centered in the range notch.	Perform the procedures in table 4-15
b	Observe the AFC LOCK indicators.	The BEACON indicator is illuminated	Refer to figure 23.
c	While observing the RCVR TEST meter vary the PRESET 1 COARSE control counter-clockwise and clockwise to obtain meter indications from 40 to 60	The RCVR TEST meter indications are obtained	Perform the procedures in table 4-15
		A stable radar test set signal remains present on the range indicator for RCVR TEST meter indications from 40 to 60.	Perform the procedures in table 4-15.
d	Readjust the PRESET 1 COARSE and FINE controls using the procedures in step 2j and k above.		
e	On the missile track control drawer, set the DISABLE switch to the down position		
f	On the missile control indicator group, set the SIGNAL LEVEL switch to 70		
g	Momentarily operate the BO SWEEP control.	The SWP CENTER indicator is extinguished.	Perform the procedures in table 4-15
h	Set the SIGNAL LEVEL switch to 00	The BEACON indicator is illuminated	Refer to figure 23.
		The RCVR TEST meter indicates between 45 and 55 with the AFC SENS switch in the HI position.	Perform the procedures in table 4-15
		The radar test set signal on the range indicator is stable.	Perform the procedures in table 4-15
4	Reestablish the switch positions.		
	On the missile control indicator group, set the TARGET-STANDBY MISSILE switch to STANDBY and the SIGNAL LEVEL switch to 70		

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(U) Table 2-16 Daily Range System Checks-MTR

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Step	Operation	Normal indication	Corrective procedure
1.	Prepare for the MTR range system checks.		
a	Perform the procedures in table 2-1		
b	On the missile track control drawer, set the switches as indicated		
	Switch	Setting	
	TEST	TEST	
	DISABLE	down	
	RANGE	NORMAL	
c	On the missile track control power supply, set the AGC-MANUAL switch to AGC		
d	On the missile error voltage monitor, set the BEACON-TARGET switch to TARGET		
e	On the MTR RSPI, set the COORD SELECT switch to D FCN		
f	On the range indicator, verify that the IMAGE SPACING switch is set to OFF and the SWEEP LENGTH control is fully counterclockwise.		
g	On the rear electrical panel of the coder, set the switches as indicated		
	Switch	Setting	
	MISSILE RESPONSE	NORMAL	
	TIME ADJUST		
	PRF	NORMAL	
h	On the coder control panel, set the PREKNOCK switch to NORMAL		
2.	Check the range gate operation.		
	On the missile track control drawer, operate the SLEW switch to slew the range from 0 to 200,000 yards		
	The expanded area of the sweep and the range notch on the range indicator move smoothly from 0 to 200,000 yards		
	Refer to figure 21.4		
	The edge of the sweep extends 1/4 inch beyond the expanded area		
	(1) On the track sweep generator in the range indicator, adjust the MAX RANGE SWEEP control		
	(2) Refer to figure 21.4.		
3.	Energize the MTR transmitter		
a	On the missile track control power supply, rotate the HV SUPPLY knob to START and depress the HV SUPPLY-ON switch		
b	Adjust the HV SUPPLY knob to obtain an indication of 30 milliamperes on the MAGNETRON meter		
	Note: The same method of performing the range zero procedures (known datum point (KDP) or range zero pulse method) must be used for the TRM MTR and TRR. The methods must not be intermixed.		

\* Omit this step if the checks in the preceding tables have been performed in sequence

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(U, Table 2-16 Daily Range System Checks-MTR Continued)

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Step	Operation	Normal indication	Corrective procedure
4.	<b>Check the MTR range zero using a KDP</b> <i>Note.</i> If a surveyed KDP is not available, proceed to step 5 below.		
	<ol style="list-style-type: none"> <li>a. Rotate the elevation and azimuth handwheels to position the antenna to the coordinates of the KDP.</li> <li>b. By varying the MTR range, center the KDP signal in the range notch.</li> <li>c. On the missile track control drawer, set the elevation, azimuth, and range MAN/AID-AUTO switches to AUTO.</li> </ol>		

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(U) Table 2-16. Daily Range System Checks—MTR—Continued

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Step	Operation	Normal indication	Corrective procedure
4	Continued	The elevation and azimuth coordinates and range indication are stable.	Select a different KDP
		The MTR RSPU COORD DISPLAY indicates the surveyed range to the KDP	On the MTR RSPU, adjust the BEACON DELAY thumbwheel switches and momentarily depress the INTR switch until the KDP range is indicated. Record the BEACON DELAY thumbwheel switch settings.
	iii. Set the elevation, azimuth, and range MAN-AID-ALTO switches to MAN		
5	Check the missile response time correction to MTR range zero.		
	a. On the coder rear electrical panel, set the MISSILE RESPONSE TIME ADJUST switch to TEST		
	b. Subtract the assigned missile response time in yards from the KDP range. Record this range difference as $D_4$		
	c. Center the KDP signal in the range notch		
	d. On the missile track control drawer, set the elevation, azimuth, and range MAN-AID-ALTO switches to ALTO		
		The MTR RSPU COORD DISPLAY indicates the computed $D_4$ range difference	On the coder rear electrical panel, release the MISSILE RESPONSE TIME ADJUST control lock. Adjust the control to obtain the required range difference. Lock the control.
	e. Set the elevation, azimuth, and range MAN-AID-AUTO switches to MAN		
	f. Set the MISSILE RESPONSE TIME ADJUST switch to NORMAL		
	Note: Proceed to step 8 below if the MTR range zero was established using a KDP		
6	Check the MTR range zero using the range zero pulses.		
	a. Rotate the SWEEP LENGTH control fully clockwise		
	a.1. On the missile track control drawer, set the RANGE switch to ZERO		
		At least 15 stable range zero pulses are present on the range indicator	Perform the procedures in table 2-14
	b. Set the MTR range to center the range notch on the eighth range zero pulse		
	c. Set the range MAN-AID-ALTO switch to ALTO. Note and record the indication on the RSPU COORD DISPLAY. Designate this range indication as $D_2$		

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(U) Table 2-16 Daily Range System Checks-MTR-Continued

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Step	Operation	Normal indication	Corrective procedure
6.	Continued		
d.	Set the range MAN-AID-AUTO switch to MAN		
e.	Set the MTR range to center the range notch on the fourth range zero pulse		
f.	Set the MAN-AID-AUTO switch to AUTO. Note and record the indication on the MTR RSPU COORD DISPLAY. Designate this range indication as $D_1$ .		
g.	Subtract $D_1$ from $D_2$ . Record the range difference.		
	$D_1$ equals the range difference.		On the MTR RSPU, adjust the BEACON DELAY thumbwheel switches and momentarily depress the ENTER switch until the value on the COORD DISPLAY equals the range difference. Record the BEACON DELAY thumbwheel switch settings.
h.	Set the range MAN-AID-AUTO switch to MAN		
7.	Check the missile response time correction to MTR range zero using the range zero pulses		
a.	On the coder rear electrical panel, set the MISSILE RESPONSE TIME ADJUST switch to TEST		
b.	Subtract the assigned missile response time in yards from the range difference recorded in step 6g above. Record this range difference as $D_3$ .		
c.	Set the MTR range to center the range notch on the fourth range zero pulse		
d.	Set the range MAN-AID-AUTO switch to AUTO		
	The RSPU COORD DISPLAY indicates the computed $D_3$ range difference		On the coder rear electrical panel, release the MISSILE RESPONSE TIME ADJUST control lock. Adjust the control to obtain the required range difference. Lock the control.
e.	Set the range MAN-AID-AUTO switch to MAN		
f.	Set the MISSILE RESPONSE TIME ADJUST switch to NORMAL		
g.	On the missile track control drawer, set the RANGE switch to NORMAL		
h.	Set the TARGET-BEACON switch to BEACON		
i.	Rotate the SWEEP LENGTH control fully counterclockwise		
B.	Deenergize the MTR transmitter		
	On the missile track control power supply, rotate the HV SUPPLY knob to START and depress the HV SUPPLY OFF switch.		

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(U) Table 2-17 Daily Monopulse Receiver Checks-MTH

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Step	Operation	Normal indication	Corrective procedure
1	<i>Note:</i> To minimize RF interference insure that the MTR and TTR antennas are not simultaneously aimed at the radar test set mast or other common object.		
	Prepare for the monopulse receiver checks.		
	a.	Perform the procedures in table 2-1 <sup>1</sup> .	
	b.	On the missile track control drawer, set the switches as indicated.	
		<i>Switch</i>	<i>Setting</i>
		TEST	TEST
		DISABLE	down
		RANGE	NORMAL
	c.	On the missile control-indicator group, set the switches as indicated.	
		<i>Switch</i>	<i>Setting</i>
		SIGNAL LEVEL	00
		FREQ SELECT	REMOTE
		MODE	PULSE
		PULSES	SINGLE
		TARGET STAND- BY-MISSILE	STANDBY
	d.	On the missile track control-power supply, verify that the AGC-MANUAL switch is set to AGC.	
	e.	On the missile error voltage monitor, set the switches as indicated.	
		<i>Switch</i>	<i>Setting</i>
		(IF TEST)-ADJ	ADJ
		RCVR TEST	BIAS
		BEACON-TARGET	BEACON
		PRESET	1
		VID MON	SUM
	f.	Momentarily operate the SWEEP PRESET switch.	
		The SWEEP CENTER indicator is illuminated.	
		Refer to figure 23.	
	g.	On the IF test generator, verify that the OSC switch is set to OFF.	
	2	Check the performance of the monopulse receiver on receiver noise signals.	
		<i>Note:</i> All switches and meters are located on the missile error voltage monitor unless otherwise indicated.	
	a.	Observe the RCVR TEST meter.	

<sup>1</sup> Omit this step if the checks in the preceding tables have been performed in sequence.

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(U) Table 2-17 Duty Monopulse Receiver Checks-MTR-Continued

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Step	Operation	Normal indication	Corrective procedure
2.	Continued		
		The average indication is between 0 and 10.	(1) Verify that the radar test set is not selected. (2) Perform the procedures in table 4-16.
b	Set the (IF TEST)-ADJ switch to (IF TEST) and the RCVR TEST switch to (SUM)	The average indication on the RCVR TEST meter is between 40 and 60.	Perform the procedures in table 4-16.
c	Set the RCVR TEST switch to (AZ)	The average indication on the RCVR TEST meter is between 25 and 100.	Perform the procedures in table 4-16.
d	Set the RCVR TEST switch to (EL)	The average indication on the RCVR TEST meter is between 25 and 100.	Perform the procedures in table 4-16.
3.	Prepare to acquire the radar test set.		
	On the missile error voltage monitor, set the (IF TEST)-ADJ switch to ADJ and the RCVR TEST switch to BIAS.		
4.	Acquire and lock on the radar test set signal		
a	On the missile control-indicator group, set the TARGET STANDBY-MISSILE switch to MISSILE		
b	Perform the procedures in table 2-15, step 2		
c	On the missile track control drawer, set the range, elevation, and azimuth MAN-AID-AUTO switches to AUTO	The radar test signal is stable and centered in the range notch.	(1) Repeat b and c above (2) Perform the procedures in table 5-19.
d	Note the range, elevation, and azimuth LED position data	Set the elevation, azimuth, and range switches to MAN	
		The elevation, azimuth, and range displays are stationary.	Perform the servo balance procedures in table 4-17, steps 2, 4, and 5 as required.
	Note: Care should be taken to keep the elevation, azimuth, and range LED position data the same as noted for the lock-on position.		

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(U) Table 2-17 Daily Monopulse Receiver Checks--MTR--Continued

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Step	Operation	Normal indication	Corrective procedure
5	Prepare the missile test adapter for the monopulse receiver sensitivity check.		
	a.	Connect a coaxial cable between CP3 A-M VIDEO TEST (located on the missile side of the signal distribution panel in the radar set group) and the missile error voltage monitor VID MON coaxial jack	
	b.	On the missile test adapter, set the MEAS-CAL switch to MEAS and the AMP ON OFF switch to ON	
	c.	Set the VIDEO switch (S19) to TEST	
		The radar test set signal is present on the range indicator	
		The signal amplitude is approximately 3/4 inch.	
		(1) On the test adapter, adjust the GAIN control and the setting of the ATTENUATOR VOLTAGE switch.	
		(2) Refer to figure 21	

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EU, Table 2-17 Daily Monopulse Receiver Checks -MTR--Continued

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Step	Operation	Normal indication	Reference procedure
5.	<b>Continued</b> <b>d (Deleted)</b>		
	<p><i>Note:</i> If the test signal indicates ringing, it may be necessary to add a tee connector and 50-ohm termination at J1 of the missile test adapter.</p> <p><i>Note:</i> All switches in steps 6 through 9 below are located on the missile control indicator group unless otherwise indicated.</p>		
8.	<b>Check the sum channel receiver sensitivity.</b>		
	a. On the missile track control drawer set the DISABLE switch to the down position.		
	b. Set the PULSES switch to DOUBT F and the SIGNAL LEVEL switch to 40.		
	<b>Two radar test set signals appear on the range indicator. The signal amplitudes are approximately equal.</b>		
			Perform the procedures in table 5-6.
	c. Increase the SIGNAL LEVEL switch indication until the first radar test set signal is barely discernible.		
	<b>The second pulse remains visible and does not disappear at any time.</b>		
			Perform the procedures in table 5-6.
	d. Record the SIGNAL LEVEL switch indication.		
	<b>The switch indication plus 2 db is equal to or greater than the computed receiver sensitivity figure.</b>		
			(1) Perform the procedures in table 4-14. Repeat the procedures in table 2-17.
			(2) Perform the procedures in table 5-3. Repeat the procedures in table 2-17.
	<i>Note:</i> The initial computed receiver sensitivity figure is obtained by performing the procedures in table 5-16.		
7.	<b>Check the azimuth channel receiver sensitivity.</b>		
	a. Set the SIGNAL LEVEL switch to 00.		
	b. On the missile error voltage monitor set the VID MON switch to AZ.		
	c. Rotate the azimuth handwheel to position the antenna 10 mils greater than the radar test set coordinates noted in step 4d above.		
	d. Increase the SIGNAL LEVEL switch indication until the first radar test signal is barely discernible.		
	e. Record the SIGNAL LEVEL switch indication.		

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(U) Table 2-17 Daily Monopulse Receiver Checks: MTR: Continued

**UNCLASSIFIED**

Step	Operation	Normal indication	Corrective procedure								
7	Continued		<p>The switch indication plus 8 db is equal to or greater than the SIGNAL LEVEL switch indication recorded in step 6d above.</p> <p>(1) Perform the procedures in table 4-14. Repeat the procedures in table 2-17.</p> <p>(2) Perform the procedures in table 5-3. Repeat the procedures in table 2-17.</p> <p>f. Rotate the azimuth handwheel to position the antenna to the radar test set coordinates noted in step 4d above.</p>								
8.	Check the elevation channel receiver sensitivity		Repeat step 7 above, substituting EL for AZ and elevation for azimuth.								
9.	Reestablish the switch positions and remove the coaxial cable		<p>a. Remove the coaxial cable added in step 5a above.</p> <p>b. On the test adapter, set the AMP ON-OFF switch to OFF.</p> <p>c. Set the VIDEO switch to NORMAL.</p> <p>d. On the missile control-indicator group, set the switches as indicated.</p> <table><tr><th>Switch</th><th>Setting</th></tr><tr><td>SIGNAL LEVEL</td><td>70</td></tr><tr><td>PULSES</td><td>SINGLE</td></tr><tr><td>TARGET-STAND-BY MISSILE</td><td>STANDBY</td></tr></table> <p>Note: If a tee connector and 50-ohm termination were added in step 5d above, they should be disconnected at J1 of the missile test adapter.</p>	Switch	Setting	SIGNAL LEVEL	70	PULSES	SINGLE	TARGET-STAND-BY MISSILE	STANDBY
Switch	Setting										
SIGNAL LEVEL	70										
PULSES	SINGLE										
TARGET-STAND-BY MISSILE	STANDBY										

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(U) Table 2 JB Daily ATC Checks—MTR

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Step	Operation	Normal indication	Corrective procedure
	<p><i>Note:</i> To minimize RF interference, ensure that the MTR and TTR antennas are not simultaneously aimed at the radar test set mast or other common object.</p>		
1.	<b>Prepare for the ATC check.</b>		
	a Perform the procedures in table 2-1.		
	b On the missile track control drawer set the switches as indicated.		
	Switch	Setting	
	TEST	TEST	
	DISABLE	DISABLE	
	RANGE	NORMAL	
	c On the missile control indicator group, verify that the TARGET—STANDBY—MISSILE switch is set to STANDBY.		
	d On the missile error voltage monitor set the switches as indicated.		
	Switch	Setting	
	(IF TEST)—ADJ	(IF TEST)	
	RCVR TEST	(SUM)	
	BEACON—TARGET	BEACON	
	PRESET	1	
2.	<b>Prepare the IF test generator to obtain signal-to-noise attenuator reference.</b>		
	a Set the switches as indicated.		
	Switch	Setting	
	OSC	ON	
	MODE	CW	
	PULSE WIDTH	SHORT	
	b Set the COARSE IF FREQ ADJUST control to 0.		
	c Set the 0—90 dB ATTENUATOR switch to 90.		
	d Momentarily depress the RANGE PRE-SET switch.		
	e On the error voltage monitor, hold the REMOTE—LOCAL switch to LOCAL and adjust the MAN GAIN control to obtain an indication of 50 on the RCVR TEST meter.		
	f Adjust the ATTENUATOR switches until the error voltage monitor RCVR TEST meter indicates as close to 70 as possible.		
	g Release the REMOTE—LOCAL switch.		
	h Record the settings of the ATTENUATOR switches.		
	i Set the MODE switch to PULSE.		
3.	<b>Check the ATC circuit.</b>		
	a Decrease the setting of the 0—90 dB ATTENUATOR switch relative to the reference attenuation recorded in step 2h above by 10 db.		
	b Set the MTR range to center the range notch on the test pulse.		
	c On the missile track control drawer set the range MAN—AID—AUTO switch to AUTO.		

Omit this step if the checks in the preceding tables have been performed in sequence.

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(U) Table 2-18 Daily ATC Checks - MTR - Continued

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Step	Operation	Normal indication	Corrective procedure
3.	Continued		
		The COAST indicator light on the missile track control drawer is extinguished.	On the AGC monitor amplifier, adjust R18 until the COAST indicator is extinguished. Refer to figure 34
	d. Increase the setting of the ATTENUATOR switches in 1 db steps until the COAST indicator light just illuminates	The value set on the ATTENUATOR switches is 4 to 8 db less than the attenuation value recorded in step 2h above.	(1) Set the ATTENUATOR switch to 6 db less than the value recorded in step 2h above. (2) On the AGC monitor amplifier, adjust R18 until the COAST indicator light just illuminates. (3) Repeat step 3. Refer to figure 34
4.	Reestablish the switch positions.		
	a. On the missile track control drawer set the range MAN AID AUTO switch to MAN and set the DISABLE switch to the down position		
	b. On the missile error voltage monitor, set the switches as indicated:		
	Switch	Setting	
	(IF TEST)—ADJ	ADJ	
	RCVR TEST	AFC	
	c. On the IF test generator, set the OSC switch to OFF and the 0 -90 db ATTENUATOR switch to 90.		

(U) Table 2-19 Daily Tracking Servo Checks - MTR

**UNCLASSIFIED**

Step	Operation	Normal indication	Corrective procedure
1.	Acquire the radar test set.		
	a. Perform the procedures in table 2-15, steps 1 and 2.		
	b. Observe the range indicator on the missile radar control console	A stable radar test set signal is centered in the range notch.	Perform the procedures in table 4-15.

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(U) Table 2-19 Daily Tracking Servo Checks—MTR—Continued

**UNCLASSIFIED**

Step	Operation	Normal Indication	Corrective procedure
1.	Continued		
	c On the missile track control drawer set the elevation and azimuth MAN-AID-AUTO switches to AUTO	The signal is still present in the range notch.	Perform the procedures in table 5-19
2.	Check the elevation and azimuth auto lock-on error.		
	a On the missile error voltage monitor, hold the EL SENS and AZ SENS switches in the HJ position	Both meters indicate within one small division of zero	Perform the procedures in table 5-19
	b Release the switches		
	c Note and record the elevation and azimuth LED position data. Set the elevation and azimuth MAN-AID-AUTO switches to MAN.		
	<i>Note:</i> Unless otherwise indicated in the following steps, the elevation and azimuth antenna positions should be at the LED indications noted above.		
3.	Check the elevation servo sensitivity.		
	a Increase the antenna elevation coordinate 5 mils from the lock-on value recorded in step 2c above	The EL ANGLE ERROR meter on the missile error voltage monitor indicates between +4 and +6 mils	(1) On the missile error voltage monitor, adjust the EL GAIN control to obtain +5 mils on the EL ANGLE ERROR meter (2) Perform the procedures in table 5-19
	b Decrease the antenna elevation coordinate 5 mils from the lock-on value recorded in step 2c above	The EL ANGLE ERROR meter indicates between -4 and -6 mils.	Repeat a above, including the corrective procedure in (1) Repeat b above
4.	Check the maximum elevation servo sensing error.		
	Decrease the antenna elevation coordinate to obtain maximum indication on the missile error voltage monitor EL ANGLE ERROR meter.	The indication on the meter is -15 mils or greater.	Perform the procedures in table 5-19

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U: Table 2 19 Daily Tracking Servo Checks MTH Continued

**UNCLASSIFIED**

Step	Operation	Normal indication	Corrective procedure
5.	<b>Check the antenna auto lock on from maximum error</b>		
a	While observing the ELEVATION ERROR meter on the missile track indicator, set the elevation MAN—AID—AUTO switch to AUTO.		
	The meter indication returns to zero with no more than one overshoot.		
	Perform the procedures in table 5-19		
b	Set the elevation MAN—AID—AUTO switch to MAN		
6.	<b>Check the azimuth tracking servo.</b>		
	Repeat steps 3 through 5 above, substituting AZ for EL and azimuth for elevation		
7.	<b>Reestablish the switch positions.</b>		
a	On the missile control-indicator group, set the TARGET STANDBY MISSILE switch to STANDBY and the SIGNAL LEVEL switch to 70		
b	On the missile track control drawer, set the DISABLE switch to the down position.		

U: Table 2 20 Daily Radar Coder Checks—MTH

**UNCLASSIFIED**

Step	Operation	Normal indication	Corrective procedure
1.	<b>Prepare for the radar coder check.</b>		
a	Perform the procedures in table 2-1.		
b	On the coder track data processor power supply, observe the CODER +5V indicator		
	The CODER +5V indicator is illuminated.		
	Perform the CODER +5V measurement in table 5-30, step 5		
	Refer to figure 27		
c	On the missile track control drawer set the switches as indicated		
	Switch	Setting	
	TEST	TEST	
	DISABLE	down	
	RANGE	NORMAL	
d	On the missile track control power supply, set the AGC MANUAL switch to MANUAL.		
e	On the missile error voltage monitor set the BEACON TARGET switch to BEACON and the PRESET switch to 3. Adjust the PRESET 3 control maximum clockwise		
f	On the missile error voltage monitor, momentarily operate the SWEEP PRESET switch.		
	The SWP CENTER indicator is illuminated.		
	Refer to figure 23.		
g	On the coder rear electrical panel, verify that the PRF switch is set to NORMAL.		

\*Omit this step if the checks in the preceding tables have been performed in sequence.

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Step	Operation	Normal indication	Corrective procedure
1.	<b>Continued</b>		
	a. On the coder control panel, set the switches as indicated		
	<i>Switch</i>	<i>Setting</i>	
	PREKNOCK	TEST	
	BURST ENABLE	NORMAL	
	BURST ORDER	TEST	
	COMMAND ORIGIN	SIMULATED	
	BATTERY CODE	Greater than 2	
2.	<b>Check the timing indicators.</b>		
	a. Observe the coder rear electrical pane.		
	All indicators except <b>PARITY ERROR</b> are illuminated.		
	Refer to figure 36.		
	b. On the coder control panel, set the BURST ORDER switch to NORMAL.		
	The rear electrical panel BURST indicator extinguishes.		
	Refer to figure 36		
3.	<b>Check the status of the transmitter sync output pulses.</b>		
	<i>Note</i> In the remainder of this table all switches and indicators are located on the coder control panel unless otherwise indicated		
	a. Observe the coder control panel.		
	The <b>OUTPUT PULSES</b> indicator is illuminated.		
	Refer to figure 36.		
	b. Set the BURST ORDER switch to TEST and then to NORMAL.		
	The <b>OUTPUT PULSES</b> indicator remains illuminated.		
	Refer to figure 36		
	c. On the missile error voltage monitor set the BEACON—TARGET switch to TARGET		
	The <b>OUTPUT PULSES</b> indicator is extinguished.		
	Refer to figure 36.		
	d. On the missile error voltage monitor, set the BEACON—TARGET switch to BEACON		
4.	<b>Check the coder command status indicators.</b>		
	a. Set the switches as indicated:		
	<i>Switch</i>	<i>Setting</i>	
	SELECT	BOTH	
	PITCH	+MAX	
	YAW	+MAX	
	b. Observe the <b>COMMAND</b> indicators.		
	In both the PITCH and YAW indicator columns, only the <b>TYPE</b> and +MAX indicators are illuminated.		
	Refer to figure 36.		



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(U) Table 2 20 Daily Radar Coder Checks MTR Continued

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Step	Operation	Normal indication	Corrective procedure
4.	<b>Continued</b>		
c	Set the SELECT switch to PITCH	The complete column of YAW indicators is extinguished. The PITCH indicator column TYPE and + MAX indicators are illuminated.	Refer to figure 36. Refer to figure 36.
d	Set the SELECT switch to YAW	The complete column of PITCH indicators is extinguished. The YAW indicator column TYPE and + MAX indicators are illuminated.	Refer to figure 36. Refer to figure 36.
e	Set the SELECT switch to BOTH and the PITCH and YAW switches to ZERO	The PITCH and YAW + MAX indicators extinguish, and the ZERO indicators illuminate.	Refer to figure 36.
f	Set the PITCH and YAW switches to MAX	The PITCH and YAW ZERO indicators extinguish, and the - MAX indicator illuminates.	Refer to figure 36.
g	Set the BURST ENABLE switch to TEST	The BURST ENABLE indicator illuminates. The complete column of YAW indicators is extinguished.	Refer to figure 36. Refer to figure 36.
		The PITCH - MAX indicator extinguishes, and the ZERO indicator illuminates.	Refer to figure 36.
h	Set the BURST ENABLE switch to NORMAL	The BURST ENABLE indicator is extinguished. The YAW TYPE and - MAX indicators are illuminated.	Refer to figure 36. Refer to figure 36.
		The PITCH TYPE and - MAX indicators illuminate.	Refer to figure 36.
i	Set the BURST ORDER switch to TEST	The BURST ORDER indicator illuminates.	Refer to figure 36.

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(U) Table 2-20. Daily Radar Coder Checks-MTR--Continued

## UNCLASSIFIED

Step	Operation	Normal indication	Corrective procedure
4.	Continued	There is no status change for the COMMANDS indicators.	Refer to figure 36.
j.	Set the BURST ORDER switch to NORMAL	The BURST ORDER indicator extinguishes.	Refer to figure 36.
		There is no status change for the COMMANDS indicators.	Refer to figure 36
5.	Energize the MTR transmitter.		
a.	On the missile track control-power supply, rotate the HV SUPPLY knob to START		
b.	Depress the HV SUPPLY-ON switch and adjust the HV SUPPLY knob to obtain an indication of 10 ma on the MAGNETRON meter		
6.	Check the magnetron output pulses.		
a.	On the missile range indicator, rotate the SWEEP LENGTH knob fully clockwise.		
a 1.	On the missile track control power supply, adjust the receiver GAIN knob to just barely remove the receiver noise from the range indicator.	Four distinct pulses are present.	Refer to figure 36.
b.	Set the MTR range to center the range notch on the third pulse	Note: The third pulse consists of two closely spaced pulses. Adjust the SWEEP LENGTH knob for better resolution.	
		Two distinct pulses are in the expanded sweep.	Refer to figure 36.
c.	Set the SELECT switch to PITCH	The first pulse in the expanded sweep disappears.	Refer to figure 36.
d.	Set the SELECT switch to YAW.	The second pulse in the expanded sweep disappears, and the first pulse reappears.	Refer to figure 36.
e.	Set the BURST ENABLE switch to TEST	The pulse in the expansion sweep and the pulse to its right move out in range.	Refer to figure 36
f.	Set the BURST ENABLE switch to NORMAL.		
g.	Set the SELECT switch to BOTH and the PITCH and YAW switches to ZERO		

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(U) Table 2-20. Daily Radar Coder Checks—MTR—Continued

**UNCLASSIFIED**

Step	Operation	Normal indication	Corrective procedure																
6.	Continued																		
		The third set of pulses and the fourth pulse move out in range	Refer to figure 36																
		The first two pulses remain stationary.	Refer to figure 36																
h.	Set the PITCH and YAW switches to + MAX.	The third set of pulses and the fourth pulse move out in range.	Refer to figure 36.																
		The first two pulses remain stationary.	Refer to figure 36.																
i.	Set the MTR range to place the range notch just to the right of the second pulse	Only one pulse is present in the sweep expansion area.	Refer to figure 36.																
j.	Set the BURST ORDER switch to TEST	A second pulse appears to the right of the range notch.	Refer to figure 36.																
		The amplitude of the second pulse is within 20 percent of the amplitude of the first pulse.	Refer to figure 36.																
	<i>Note:</i> It may be necessary to adjust the receiver GAIN knob so the first pulse is not in receiver saturation																		
7.	Deenergize the MTR transmitter																		
	Rotate the HV SUPPLY knob to START and depress the HV SUPPLY OFF switch																		
8.	Reestablish the switch positions.																		
a.	On the coder control panel, set the switches or verify the switch settings as indicated																		
	<table><tr><th>Switch</th><th>Setting</th></tr><tr><td>PREKNOCK</td><td>NORMAL</td></tr><tr><td>COMMAND ORIGIN</td><td>NORMAL</td></tr><tr><td>PITCH</td><td>ZERO</td></tr><tr><td>YAW</td><td>ZERO</td></tr><tr><td>BURST ORDER</td><td>NORMAL</td></tr><tr><td>BURST ENABLE</td><td>NORMAL</td></tr><tr><td>BATTERY CODE</td><td>Assigned code</td></tr></table>	Switch	Setting	PREKNOCK	NORMAL	COMMAND ORIGIN	NORMAL	PITCH	ZERO	YAW	ZERO	BURST ORDER	NORMAL	BURST ENABLE	NORMAL	BATTERY CODE	Assigned code		
Switch	Setting																		
PREKNOCK	NORMAL																		
COMMAND ORIGIN	NORMAL																		
PITCH	ZERO																		
YAW	ZERO																		
BURST ORDER	NORMAL																		
BURST ENABLE	NORMAL																		
BATTERY CODE	Assigned code																		
b.	On the missile error voltage monitor, set the PRESET switch to 1.																		
c.	On the missile track control power supply, set the AGC-MANUAL switch to AGC and rotate the GAIN knob fully counterclockwise																		
d.	On the missile range indicator, rotate the SWEEP LENGTH knob fully counterclockwise.																		

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(U) Table 2-21 Daily Acquire and Command Checks—MTR

**UNCLASSIFIED**

Step	Operation	Normal indication	Corrective procedure
1.	<b>Prepare for the acquire and command checks.</b>		
	a. Perform the procedures in table 2-1. <sup>1</sup>		
	b. On the missile error voltage monitor, set the switches as indicated		
	Switch	Setting	
	(IF TEST)—ADJ	ADJ	
	RCVR TEST	AFC	
	PRESET	1	
	BEACON -TARGET	BEACON	
	c. On the missile track control drawer set the switches as indicated:		
	Switch	Setting	
	TEST	TEST	
	DISABLE	DISABLE	
	d. On the coder control panel, set the switches as indicated.		
	Switch	Setting	
	PREKNOCK	NORMAL	
	BURST ENABLE	NORMAL	
	BURST ORDER	NORMAL	
	COMMAND ORIGIN	SIMULATED	
	SELECT	BOTH	
	PITCH	ZERO	
	YAW	ZERO	
	BATTERY CODE	Assigned code	
	e. Have the launching control console operator energize the flight simulator group, and set the MANUAL ORDERS switch to AUTO.		
2.	<b>Apply power to the computer.</b>		
	Have the computer operator energize the computer as prescribed in the daily power checks in TM 9-1430-1251-12-1		
3.	<b>Prepare the battery control console for the acquire and command checks.</b>		
	a. On the battery signal panel-indicator, set the MISSION switch to SA		
	b. Set the MISSILE switch to HE		
	c. Depress the LAUNCHER DATA switch.		
	<b>The LAUNCHER DATA—RELEASED indicator light illuminates.</b>		
			Refer to figure 42, TM 9-1430-1254-20/2
4.	<b>Energize the MTR through operate.</b>		
	Perform the procedures in table 2-13 steps 2 and 4c through e		
5.	<b>Acquire the flight simulator group.</b>		
	a. Have the launching control console operator select the flight simulator group.		

Omit this step if the checks in the preceding tables have been performed in sequence

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(U) Table 2-21 Daily Acquire and Command Checks-MTR-Continued

**UNCLASSIFIED**

Step	Operation	Normal indication	Corrective procedure
5.	Continued	The SIMULATE indicator light on the battery control console is illuminated	<p>Check to see if the battery is fully charged. Refer to figure 5-2, TM 9-1430-1254-20/2.</p>
	* On the missile track control drawer set the TEST and DISABLE switches to the down positions.	On the missile track indicator, the azimuth and elevation indicators display the coordinates of the flight simulator group.	Perform the launcher position unit adjustments in accordance with TM 9-1430-1251-10.
		The signal from the flight simulator group appears in the range notch and is stable	<p>(1) Perform the procedures in table 2-15.</p> <p>(2) Perform the procedures in table 2-20.</p>
		The AZIMUTH ERROR and ELEVATION ERROR meters on the missile track indicator indicate 0.	Perform the procedures in table 2-19.
		The COAST Indicator light on the missile track control drawer extinguishes.	Perform the procedures in table 2-18.
		The RECEIVED SIGNAL meter indicates at least 5.5.	<p>(1) Perform the procedures in table 2-17.</p> <p>(2) Request the launching control console operator to check the flight simulator.</p> <p>(3) Repeat a and b above.</p>
	c On the missile error voltage monitor, operate and hold the AFC SENS switch in the HI position.	The RCVR TEST meter indicates between 45 and 55	Perform the procedures in table 2-15.
	d Release the AFC SENS switch.		

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1. Table 2-21 Daily Acquisition and Command Checks--MTR Continued

## UNCLASSIFIED

Step	Operation	Normal indication	Corrective procedure
6.	<b>Perform the flight simulator control command checks.</b>		
a	On the missile track control drawer, set the TEST switch to TEST		
b	On the launching control console, observe the appropriate PITCH and YAW meters		
	<b>The PITCH and YAW meters indicate <math>-0.2G</math> to <math>+0.2G</math> for each channel.</b>		
	<i>Note:</i> All switches and controls are located on the order control panel unless otherwise indicated		
c	Set the PITCH switch to MAX and then to +MAX		
	<b>The PITCH meter indicates <math>-8.0</math> to <math>-9.0G</math> and then <math>+8.0</math> to <math>+9.0G</math>.</b>		
d	Set the YAW switch to MAX and then to +MAX		
	<b>The YAW meter indicates <math>-8.0</math> to <math>-9.0G</math> and then <math>+8.0</math> to <math>+9.0G</math></b>		
e	Set the BURST ENABLE and BURST ORDER switches to TEST		
	<b>The COMMAND BURST indicator light on the launching control console illuminates</b>		
	<b>On the missile track control-power supply, the indication on the MAGNETRON meter increases or remains constant.</b>		
	Refer to figures 16 and 32		
f	Set the COMMAND ORIGIN switch to NORMAL		
g	Set the PITCH and YAW switches to ZERO		
h	Set the BURST ENABLE and BURST ORDER switches to NORMAL		
7.	<b>Return the system to normal operation.</b>		
a	Rotate the HV SUPPLY knob to START and depress the HV SUPPLY OFF switch		
b	Return the battery control console and the computer to normal operation		
c	Notify the launching control console operator that the checks have been completed		

(U) Table 2-22 Daily Transmitter Checks--TRR

## UNCLASSIFIED

Step	Operation	Normal indication	Corrective procedure
1.	<b>Prepare for the TRR transmitter checks.</b>		
a	Perform the procedures in table 2-1		
b	On the range radar power control-indicator set the TEST OPERATE switch to OPERATE		
c	On the countermeasures control-indicator, rotate the MOD A HV and the MOD B HV knobs fully counterclockwise		
d	On the target track control-power supply, set the TRR PULSE WIDTH switch to LONG		
e	Have the LOPAR operator energize the LOPAR as prescribed in the power checks in TM 9-1430-1255-12-1 and set the LOPAR HIPAR AAR switch to LOPAR		
	<i>Note:</i> The controls and indicators in steps 2 through 4 below are located on the countermeasures control-indicator unless otherwise indicated		

Omit this step if the checks in the preceding table have been performed in sequence

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11/ Table 2-22 Daily Transmitter Checks-TRR Continued

**UNCLASSIFIED**

Step	Operation	Normal indication	Other indication
2.	<b>Check magnetron A.</b>		
a.	Verify that the MAN-AUTO switch is set to MAN		
b.	Set the MAG SEL switch to A, and depress the MAG A-HV ON switch		
	The MAG A-READY indicator light extinguishes, and the MAG A-HV ON indicator light illuminates.		
			Refer to figure 87
	On the range radar power control indicator, the HIGH VOLTAGE-PRE-HEAT, HOT and READY A indicator lights extinguish.		
			Refer to figure 87
	The HIGH VOLTAGE-ON A indicator light on the range radar power control-indicator illuminates.		
			Refer to figure 87
c.	Adjust the MOD A HV knob to obtain an indication in the center of the green block on the MAG A meter		
	The MAG A meter indicates in the center of the green block.		
			Perform the procedures in table 5-27
			Refer to figure 87
			Refer to figure 83.
d.	Operate the MAG A meter switch to MOD HV		
	The MAG A meter indicates within one-fourth of an inch of the left edge or one-eighth of an inch of the right edge of the green block.		
			Perform the procedures in table 5-27
			Refer to figure 87
			Refer to figure 83.
e.	Operate the MAG A meter switch to MOD CUR		
	The MAG A meter indicates within one-fourth of an inch of either edge of the green block.		
			Refer to figure 83.
f.	On the target track control-power supply, set the TRR PULSE WIDTH switch to SHORT and repeat c through e above		
3.	<b>Check magnetron B.</b>		
a.	On the target track control-power supply, set the TRR PULSE WIDTH switch to LONG		
b.	Repeat step 2b through f above for magnetron B, substituting B for A when reference is made to controls and indicators.		
c.	Set the TRR PULSE WIDTH switch to LONG.		

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*(U) Table 2-22 Daily Transmitter Checks TRR Continued***UNCLASSIFIED**

Step	Operation	Normal indication	Corrective procedure
4.	<b>Deenergize the TRR transmitter.</b>		
	a. Rotate the MOD A HV and MOD B HV knobs fully counterclockwise		
	b. Depress the MAG A—HV OFF and the MAG B—HV OFF switches		
	c. (Deleted)		

*(U) Table 2-23 Daily Target AFC Checks TRR***UNCLASSIFIED**

Step	Operation	Normal indication	Corrective procedure
1.	<b>Prepare for the target AFC checks.</b>		
	a. Perform the procedures in table 2-1 <sup>1</sup>		
	b. On the range radar power control indicator, verify that the TEST—OPERATE switch is set to OPERATE.		
	c. On the countermeasures control indicator, rotate the MOD A HV and MOD B HV knobs fully counterclockwise. Set the MAN—AUTO switch to AUTO.		
	d. On the target track control power supply, set the TRR PULSE WIDTH switch to LONG.		
2.	<b>Check the target AFC operation.</b>		
	a. On the range radar power control indicator, observe the A and B AFC LOCK indicators.		
	<b>Both indicators are extinguished.</b>		
	Refer to figure 74.		
	<sup>1</sup> Note: A test switch, controls, and indicators are located on the countermeasures control indicator unless otherwise indicated.		
	b. Energize magnetron A by depressing the MAG A—HV ON switch. Adjust the MOD A HV knob to obtain an indication in the center of the green block on the MAG A meter.		
	<b>The set of frequency pips on the panoramic sweep representing magnetron A is stationary. The other set of pips is sweeping.</b>		
	Perform the procedures in table 5-22.		
	c. Energize magnetron B by repeating b above, substituting B for A.		
	<b>Both sets of frequency pips on the panoramic sweep are stationary.</b>		
	Perform the procedures in table 5-22.		
	<b>On the range radar power control indicator, both the A and B AFC LOCK indicators are illuminated without any noticeable flicker.</b>		
	Perform the procedures in table 5-22.		
	d. On the target track control power supply, set the TRR PULSE WIDTH switch to SHORT and then to LONG.		

<sup>1</sup>Omit this step if the checks in the preceding tables have been performed in sequence.**CONFIDENTIAL**



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(L) Table 2-23 Daily Target AFC Checks TRR--Continued

UNCLASSIFIED

Step	Operation	Normal indication	Corrective procedure
2	Continued		
	Both sets of frequency pips on the panoramic sweep are stationary. One AFC break-lock cycle is permitted during the pulse width switching.		
	Perform the procedures in table 5-22.		
	<i>Note:</i> A break-lock cycle is identified as one sweep of the frequency pips. The sweep time should be less than one second.		
a	Set the MAG SFL switch to A, and operate the FREQ switch to tune the magnetron to the low and high frequency limits. Reset the frequency to approximately midband.		
	The magnetron A frequency pips on the panoramic sweep move smoothly without any AFC break-lock cycle being observed.		
	Perform the procedures in table 5-22.		
f	Repeat e above, substituting B for A.		
g	On the countermeasures control indicator, set the MAN-AUTO switch to MAN.		
3	Deenergize the A and B transmitters. <sup>2</sup>		
a	Rotate the MOD A HV and MOD B HV knobs fully counterclockwise.		
b	Depress the MAG A HV OFF and the MAG B HV OFF switches.		

<sup>2</sup> Omit this step if the checks in the succeeding tables are to be performed in sequence.

(L) Table 2-24 Daily Range System Checks--TRR

UNCLASSIFIED

Step	Operation	Normal indication	Corrective procedure
1.	Prepare for the TRR range system checks.		
	<i>Note:</i> The TTR range zero procedures in table 2-8 must be performed prior to performing the procedures in this table.		
a	Perform the procedures in table 2-1.		
b	On the target antenna control group, set the RANGE TRACK switch to TRR.		
c	On the target track control power supply, set the IND switch to R.		
d	On the TTR RSPL, set the COORD SELECT switch to D-F CN.		
e	On the range radar power control indicator, set the switches as indicated.		
	Switch	Setting	
	TEST-OPERATE	TEST	
	RANGE ZERO	OFF	
	AUTO-MAN	MAN	
	RADAR GAIN	LIN-LOG	
	REC INPUT	ANT	
	MAG SEL	A	
	PULSE	SHORT	

<sup>1</sup> Omit this step if the checks in the preceding tables have been performed in sequence.**CONFIDENTIAL**

L Table 2-24. Daily Range System Checks-TTR-Cont. need

## UNCLASSIFIED

Step	Operation	Normal indication	Corrective procedure
1.	Continued		
	f On the track data processor, set MODE SWITCH to TACTICAL and the BANK SELECTOR switch to BANK 1.		
	g On the IF test generator, verify that the OSC switch is set to OFF		
2.	Energize the A and B transmitters. <sup>1</sup>		
	a On the countermeasures control-indicator, energize magnetron A by depressing the MAG A HV ON switch. Adjust the MOD A HV knob to obtain an indication in the center of the MAG A green block.		
	b Energize magnetron B by repeating a above, substituting B for A.		
	The A and B AFC LOCK indicators on the range radar power control-indicator are illuminated.		
	Perform the procedures in table 2-23.		
	<i>Note.</i> The same method of performing the range zero procedures (known datum point (KDP), or range zero pulse method) must be used for the TTR, MTR, and TRR. The methods must not be intermixed.		
3.	Check the magnetron A range zero in the short pulse mode using a KDP.		
	<i>Note.</i> If a surveyed KDP is not available, proceed to step 7 below.		
	a Position the TTR antenna to the coordinates of the KDP.		
	b By varying the TTR range, center the KDP signal in the range notch.		
	c On the target antenna control group, set the range MAN-ACQUIRE AID-TRACK AID-AUTO switch to AUTO.		
	The KDP signal is present on the lower sweep of the range indicator.		
	Refer to figure 51.		
	The TTR RSPU COORD DISPLAY indicates the surveyed range of the KDP.		
	Adjust the MAG A SHORT PULSE control on the target range synchronizer.		
	Refer to figure 72.		
4.	Check the magnetron A range zero in the long pulse mode using a KDP.		
	On the range radar power control-indicator, set the PULSE switch to LONG.		
	The KDP signal is still present and in the range notch.		
	Reacquire the KDP.		

<sup>1</sup>Omit this step if the checks in the preceding tables have been performed in sequence.

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(U) Table 2-24 Daily Range System Checks-TRR-Continued

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Step	Operation	Normal indication	Corrective procedure
4	Continued	The TTR RSPU COORD DISPLAY indicates the surveyed range of the KDP.	Adjust the MAG A LONG PULSE control on the target range synchronizer Refer to figure 72.
5	Check the magnetron B range zero in the short pulse mode using a KDP On the range radar power control-indicator, set the MAG SEL switch to B and the PULSE switch to SHORT	The KDP signal is still present in the range notch. The TTR RSPU COORD DISPLAY indicates the surveyed range of the KDP.	Reacquire the KDP Adjust the MAG B SHORT PULSE control on the target range synchronizer Refer to figure 72.
6	Check the magnetron B range zero in the long pulse mode using a KDP On the range radar power control-indicator, set the PULSE switch to LONG	The KDP signal is still present in the range notch. The TTR RSPU COORD DISPLAY indicates the surveyed range of the KDP	Reacquire the KDP Adjust the MAG B LONG PULSE control on the target range synchronizer Refer to figure 72.
<i>Note.</i> Proceed to step 11 below if the TRR range zero was established using a KDP			
7.	Check the magnetron A range zero in the short pulse mode using range zero pulses.		
a	On the range radar power control-indicator, set the RANGE ZERO switch to TEST		
b	On the range radar power control-indicator, set the RADAR GAIN switch to MAN and adjust the RADAR GAIN knob to obtain approximately 1/8 inch of receiver noise on the lower trace of the range indicator.	At least 15 stable range zero pulses are present on the range indicator.	Perform the procedures in table 5-22, step 15 or 16.
c	Set the TTR range to center the eighth range zero pulse in the range notch		

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(U) Table 2-24. Daily Range System Checks-TTR-Continued

## UNCLASSIFIED

Step	Operation	Normal indication	Corrective procedure
7.	Continued		
d	On the target antenna control group, set the range MAN-ACQUIRE AID-TRACK AID-AUTO switch to AUTO		
e	Using the RADAR GAIN knob, adjust the amplitude of the selected range zero pulse to approximately 1/2 inch.		
f	Note and record the indication on the TTR RSPU COORD DISPLAY. Designate this range indication as $D_2$		
g	Set the range MAN-ACQUIRE AID-TRACK AID-AUTO switch to MAN		
h	Set the TTR range to center the fourth range zero pulse in the range notch.		
i	Set the range MAN-ACQUIRE AID-TRACK AID-AUTO switch to AUTO		
j	Note and record the indication on the TTR RSPU COORD DISPLAY. Designate this range indication as $D_1$ .		
k	Subtract $D_1$ from $D_2$ . Record the range difference.		
	Range $D_1$ equals the range difference for magnetron A.		
			Adjust the MAG A SHORT PULSE control on the target range synchronizer.
			Refer to figure 72.
8.	Check the magnetron A range zero in the long pulse mode using range zero pulses.		
a	On the range radar power control indicator, set the PULSE switch to LONG		
b	Using the RADAR GAIN knob on the range radar control indicator, adjust the amplitude of the selected range zero pulse to approximately 1/2 inch.		
	The range zero pulses are stable.		
			Perform the procedures in table 5-22, step 15 or 16
	The fourth range zero pulse is still present in the range notch.		
			Reacquire the range zero pulse.
	The TTR RSPU COORD DISPLAY indicates the range difference recorded in step 7k above		
			Adjust the MAG A LONG PULSE control on the target range synchronizer.
			Refer to figure 72.
9.	Check the magnetron B range zero in the short pulse mode using range zero pulses.		
a	On the range radar power control indicator, set the MAG SEL switch to B and the PULSE switch to SHORT		
b	On the target antenna control group, set the range MAN-ACQUIRE AID-TRACK AID-AUTO switch to MAN.		

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(U) Table 2-24. Daily Range System Checks-TRR-Continued

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Step	Operation	Normal indication	Corrective procedure
9.	Continued		
	c	Perform step 7b through k above, substituting B for A	
10.	Check the magnetron B range zero in the long pulse mode using range zero pulses.		
	a.	On the range radar power control indicator, set the PULSE switch to LONG	
	b.	Perform step 8b above, substituting B for A.	
	c	On the target antenna control group, set the range MAN-ACQUIRE AID-TRACK AID-AUTO switch to MAN.	
11.	Deenergize the A and B transmitters.		
	a.	On the countermeasures control indicator, rotate the MOD A HV and MOD B HV knobs fully counterclockwise	
	b.	Depress the MAG A- HV OFF and MAG B- HV OFF switches.	
12.	Reestablish the switch positions.		
	a.	On the range radar power control indicator, set the switches as indicated	
		Switch	Setting
		TEST-OPERATE	OPERATE
		RANGE ZERO	OFF
		RADAR GAIN	LIN-LOG
	b.	On the target antenna control group, set the RANGE TRACK switch to TTR	

(U) Table 2-25. Daily Lin-Log Receiver Checks-TRR

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Step	Operation	Normal indication	Corrective procedure
1.	Prepare for the TRR lin-log receiver checks.		
	a.	Perform the procedures in table 2-1. <sup>a</sup>	
	a.1	On the range radar power control indicator, rotate the RADAR GAIN knob fully counterclockwise.	
	b	On the range radar power control indicator, set the switches as indicated.*	
		Switch	Setting
		TEST-OPERATE	TEST
		MAG SEL	B
		FREQUENCY A-B	B
		RANGE ZERO	OFF
		AUTO-MAN	MAN
		PULSE	LONG
		RADAR GAIN	MAN
		NOISE OUTPUT	RADAR
		REC INPUT	NOISE LAMP

\* Omit this step if the checks in the preceding tables have been performed in sequence

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(U) Table 2-25. Daily Lin Log Receiver Check-TRR-Continued

**UNCLASSIFIED**

Step	Operation	Normal indication	Corrective procedure
1.	Continued		
	<i>Note</i> For the remainder of this table, the switches, controls, and indicators are located on the range radar power control indicator unless otherwise indicated.		
	c	Operate the FREQUENCY DCR-INCR switch to tune MAG B for an indication of approximately 3.2 on the FREQ meter.	
	d	Set the MAG SEL switch to A and the FREQUENCY A-B switch to A.	
	e	Operate the FREQUENCY DCR-INCR switch to tune MAG A for an indication of approximately 2.8 on the FREQ meter.	
	f	On the TRR IF test generator, verify that the OSC switch is set to OFF	
2.	Check the receiver noise power in Channel A.		
	a.	(Deleted)	
	b	Adjust the large METER ZERO knob to obtain an indication of 0 on the NOISE OUTPUT meter	
		A NOISE OUTPUT meter indication of 0 can be obtained.	Perform the procedures in table 5-24, step 2.
	c.	Set the RADAR GAIN switch to LIN-LOG.	
		The NOISE OUTPUT meter indication is between 40 and 65.	(1) Operate the FREQUENCY DCR-INCR switch to slightly change the A magnetron frequency. Set the RADAR GAIN switch to MAN and repeat b and c above. (2) Perform the procedures in table 5-24.
3.	Check the receiver noise power difference between Channel A and Channel B.		
	a.	Set the RADAR GAIN switch to MAN.	
	b.	Adjust the RADAR GAIN knob to obtain an indication of 50 on the NOISE OUTPUT meter.	
	c.	Set the MAG SEL switch to B	
		The NOISE OUTPUT meter indication is between 30 and 80.	(1) Operate the FREQUENCY DCR-INCR switch to slightly change the B magnetron frequency. Set the MAG SEL switch to A and repeat b and c above. (2) Perform the procedures in table 5-24

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(U) Table 2-25. Daily Lin-Log Receiver Checks-TRR-Continued

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Step	Operation	Normal indication	Corrective procedure
4.	Check the Channel A receiver noise figure in the long pulse mode		
a.	Set the MAG SEL switch to A.		
b.	Rotate the RADAR GAIN knob fully counterclockwise		
c.	Adjust the large METER ZERO knob to obtain an indication of 0 on the NOISE OUTPUT meter.		
d.	Depress and hold the NOISE LAMP-ON switch		
	The NOISE LAMP indicator light illuminates.		
	Refer to figure 89		
e.	Adjust the RADAR GAIN knob to obtain an indication of 100 on the NOISE OUTPUT meter.		
f.	Release the NOISE LAMP-ON switch.		
	The NOISE OUTPUT meter indication is 80 or less.		
	(1) Operate the FREQUENCY DCR-INCR switch to slightly change the A magnetron frequency. Repeat b through f above.		
	(2) Perform the procedures in table 4-21, steps 2, 3, and 6. Disregard the target AFC LOCK indicator requirement in step 3.		
5.	Check the Channel B receiver noise figure in the long pulse mode.		
a.	Set the MAG SEL switch to B.		
a.1	Rotate the RADAR GAIN knob fully counterclockwise		
a.2.	Adjust the large METER ZERO knob to obtain an indication of 0 on the NOISE OUTPUT meter		
b.	Depress and hold the NOISE LAMP-ON switch.		
c.	Adjust the RADAR GAIN knob to obtain an indication of 100 on the NOISE OUTPUT meter		
d.	Release the NOISE LAMP-ON switch.		
	The NOISE OUTPUT meter indication is 80 or less.		
	(1) Operate the FREQUENCY DCR-INCR switch to slightly change the B magnetron frequency. Repeat a.1 through d above.		
	(2) Perform the procedures in table 4-21, steps 2, 4, and 6. Disregard the target AFC LOCK indicator requirement in step 4.		
e.	Set the RADAR GAIN switch to LIN LOG.		

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(U) Table 2-25. Daily Lin-Log Receiver Checks-TRR-Continued

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Step	Operation	Normal indication	Corrective procedure
6.	Check the receiver noise on the range indicator.		
a.	On the target track control console, observe the lower sweep on the range indicator.	The amplitude of the receiver noise is between 1/4 and 1/2 inch.	Perform the procedures in table 5-24
b.	Set the PULSE switch to SHORT	There is a change in the appearance of the receiver noise.	Perform the procedures in table 5-24
		The amplitude of the receiver noise is between 1/4 and 1/2 inch.	Perform the procedures in table 5-24.
c.	Rotate the RADAR GAIN knob fully counterclockwise.		
7.	Reestablish the switch positions.		
	On the range radar power control-indicator, set the switches as indicated		
	Switch	Setting	
	NOISE OUTPUT	OFF	
	PULSE	LONG	
	TEST-OPERATE	OPERATE	
	REC INPUT	ANT	

(U) Table 2-26 Daily Panoramic Receiver Checks-TRR

## UNCLASSIFIED

Step	Operation	Normal indication	Corrective procedure
1.	Prepare for the panoramic receiver checks.		
a.	Perform the procedures in table 2-1. <sup>1</sup>		
b.	Rotate the PAN GAIN knob fully counterclockwise.		
c.	On the range radar power control-indicator, set the switches as indicated:		
	Switch	Setting	
	TEST-OPERATE	TEST	
	NOISE OUTPUT	PAN	
	REC INPUT	NOISE LAMP	
	PAN GAIN	MAN	
	Note: For the remainder of this table the switches, controls, and indicators are located on the range radar power control-indicator unless otherwise indicated.		

<sup>1</sup> Omit this step if the checks in the preceding tables have been performed in sequence



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(U) Table 3-26 Daily Panoramic Receiver Checks: TRR Class 4000

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Step	Operation	Normal Indication	Corrective Procedure
2.	Check the receiver noise power in the panoramic receiver		
a.	Adjust the small METER ZERO knob to obtain an indication of 0 on the NOISE OUTPUT meter		
	A NOISE OUTPUT meter indication of 0 can be obtained		
			(1) Operate the FREQUENCY DCR- INCR switch to slightly change the A and B magnetron frequencies.
			(2) Perform the procedures in table 5-25, step 2b
b.	Set the PAN GAIN switch to LIN-LOG		
	The NOISE OUTPUT meter indication is between 60 and 80.		
			(1) Operate the FREQUENCY DCR- INCR switch to slightly change the A and B magnetron frequencies. Set the PAN GAIN switch to MAN and repeat a and b above
			(2) Perform the procedures in table 5-25
3	Check the receiver noise figure for the panoramic receiver		
a.	Set the PAN GAIN switch to MAN		
b.	Depress and hold the NOISE LAMP-ON switch.		
	The NOISE LAMP indicator light illuminates.		
	Refer to figure 89		
c.	Adjust the PAN GAIN knob for an indication of 100 on the NOISE OUTPUT meter		
d.	Release the NOISE LAMP-ON switch		
	The NOISE OUTPUT meter indication is 60 or less.		
			(1) Operate the FREQUENCY DCR- INCR switch to slightly change the A and B magnetron frequencies. Repeat steps 1b, 2a, and a through d above
			(2) Perform the procedures in table 4-24, steps 1 and 2.
e.	Rotate the PAN GAIN knob fully counterclockwise.		
4	Check the pan receiver presentation on the countermeasures control indicator.		
a.	Set the switches as indicated		
	Switch	Setting	
	NOISE OUTPUT	OFF	
	REC INPUT	ANT	
	PAN GAIN	LIN-LOG	

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(U) Table 2-26, Daily Panoramic Receiver Checks-TRR-Continued

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Step	Operation	Normal indication	Corrective procedure
4.	Continued		
	b. Observe the upper sweep of the countermeasures control indicator	The panoramic receiver noise is between 1/8 and 1/4 of an inch in amplitude.	Perform the procedures in table 5-26, step 5.
		The frequency pips are stationary and approximately 3/4 of an inch in amplitude.	Perform the procedures in table 5-25, step 5.
5.	Reestablish the switch positions. Set the TEST-OPERATE switch to OPERATE.		

(U) Table 2-27 Daily Countermeasures Control Indicator Checks-TRR

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Step	Operation	Normal indication	Corrective procedure
1.	Prepare for the countermeasures control indicator checks.		
	a. Perform the procedures in table 2-1. <sup>1</sup>		
	b. On the range radar power control indicator, verify that the TEST-OPERATE switch is set to OPERATE		
	c. On the target track control-power supply, verify that the TRR PULSE WIDTH switch is set to LONG		
	d. Set the TTR range to 200,000 yards.		
	<i>Note.</i> For the remainder of this table, all switches, controls, and meters are located on the countermeasures control indicator unless otherwise indicated.		
	e. Set the MAN-AUTO switch to AUTO		
2.	Energize the A and B transmitters.		
	a. Rotate the MOD A-HV ON knob fully counterclockwise		
	b. Depress the MAG A-HV ON switch		

<sup>1</sup>Omit this step if the checks in the preceding tables have been performed in sequence.**CONFIDENTIAL**

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Table 2-27 Daily Countermeasures Control Indicator Checks TRR 1.00 1000

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Step	Operation	Normal indication	Corrective procedure
2.	Continued		
	c. Adjust the MOD A HV knob to obtain an indication at the center of the MAG A meter green block		
	d. Repeat a through c above, substituting B for A		
3.	Check the presentation of the range sweep on the countermeasures control indicator		
	Observe the lower range sweep		
		The presentation is well focused with minimum distortion.	Adjust the TRR FOCUS and TRR INTENSITY controls. If required, adjust the ASTIGMATISM control inside the countermeasures control indicator (left rear)
		Refer to figure 75.	
		The range sweep is 1/2 inch below the center of the countermeasures control indicator	On the countermeasures video amplifier, adjust the RG VERT CENT control
			Refer to figure 75
		The range sweep starts just inside the left edge of the indicator, with the range notch 1/16 inch from the right edge of the indicator.	
		(1) On the countermeasures range sweep generator, adjust the SWP LG variable resistor fully counterclockwise	
		(2) On the countermeasures range sweep generator, adjust the HOR CENT control so that the sweep starts just inside the left edge of the indicator	
		(3) On the countermeasures range sweep generator, adjust the MAX SWP RG variable resistor so that the sweep duration extends 1/16 inch beyond the range notch	

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cf, Table 27 Daily Countermeasures Control Indicator Checks TRP Continued

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Step	Operation	Normal condition	Corrective procedure
3	Continued		<p>(4) Adjust the SWP LG variable resistor so that the trailing edge of the sweep is just inside the right edge of the indicator. It may be necessary to readjust the HOR (FNT) variable resistor.</p> <p>Refer to figure 75.</p> <p>The transmitter pulse is 3/4 inch in amplitude.</p> <p>On the countermeasures video amplifier, adjust the RG VIDEO GAIN variable resistor.</p> <p>Refer to figure 75.</p> <p>The receiver noise amplitude is between 3/8 and 5/8 of an inch.</p> <p>Perform the procedures in table 2-25.</p>
4	Check the presentation on the panoramic sweep. Observe the upper panoramic sweep.	<p>The presentation is well focused with minimum distortion.</p> <p>The panoramic sweep is 1/2 inch above the center of the countermeasures control-indicator.</p> <p>The sweep starts just inside the left edge of the indicator.</p> <p>The sweep extends just to the right edge of the indicator.</p>	<p>Adjust the PAN FOCUS and PAN INTENSITY controls.</p> <p>Refer to figure 75.</p> <p>On the video amplifier, adjust the PAN VERT CENT control.</p> <p>Refer to figure 75.</p> <p>On the panoramic sweep generator, adjust the HOR CENT variable resistor.</p> <p>Refer to figure 75.</p> <p>On the panoramic sweep generator, adjust the IND SWP LG variable resistor.</p> <p>Refer to figure 75.</p>
5	Check the adjustments of the panoramic oscillator circuits.		
	a Set the MAG SEL switch to A, and operate the FREQ switch to tune magnetron A to the low frequency stop		

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(U) Table 2-27 Daily Countermeasures Control Indicator Checks TRR-Cont. next

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Step	Operation	Normal indication	Corrective procedure
5.	Continued		
		The A SEL indicator is illuminated.	Perform the procedures in table 4-25
a.	Set the MAG SEL switch to B, and operate the FREQ switch to tune magnetron B to the low frequency stop	The A SEL indicator remains illuminated.	Perform the procedures in table 4-25
b.	Operate the FREQ switch to tune magnetron B to the high frequency stop.		
c.	Observe the panoramic sweep.	A pair of frequency pips appears within 1/8 inch of the sweep ends.	On the panoramic sweep generator, adjust the PAN SWP AMP variable resistor. If the requirements cannot be met, perform the procedures in table 3-15, step 4.
			Refer to figure 75
d.	Set the MAG SEL switch to A, and operate the FREQ switch to tune magnetron A to the high frequency stop	During magnetron tuning, a single pair of frequency pips moves smoothly without jumping or disappearing.	Perform the procedures in table 2-23
e.	Set the MAG SEL switch to B and operate the FREQ switch to tune magnetron B to the low frequency stop.	During magnetron tuning, a single pair of frequency pips moves smoothly without jumping or disappearing.	Perform the procedures in table 2-23
f.	Observe the panoramic sweep	A pair of frequency pips appears within 3/16 inch of the sweep ends.	(1) On the TRR antenna support base, set the ANTENNA switch to DISABLE and the BLOWER switch to OFF. Perform the procedures in table 3-14, steps

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U) Table 2-27 Daily Countermeasures Control Indicator Checks-TRR-Cont. need

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Step	Operation	Normal indication	Corrective procedure
5.	Continued		<p>4, 5, and 9g Repeat a through f above</p> <p>(2) Perform the procedures in table 3-15 step 4. Repeat a through f above</p> <p>Refer to figure 75</p>
6.	Check the pedestal alignment on the panoramic sweep.		
	a. Set the MAG SEL switch to B and operate the FREQ switch to tune magnetron B to cause the frequency pips for both magnetrons to coincide		
	Note: If magnetron B does not tune low enough it may be necessary to increase the magnetron A frequency.		
	b. Set the MAN-AUTO switch to MAN		
	A pedestal appears under the frequency pips, and the pedestal is wider than the frequency pips.		
	The pedestal amplitude is approximately 1/4 inch.		
	Perform the procedures in step 7 below		
	On the panoramic sweep generator, adjust the PED AMP variable resistor for a 1/4-inch pedestal amplitude		
	Refer to figure 75.		
	c. Set the MAG SEL switch to A.		
	The pedestal under the frequency pips is wider than the frequency pips.		
	Perform the procedures in step 7 below		
	The pedestal did not shift horizontally more than 1/8 inch		
	(1) On the range antenna support base, set the ANTENNA switch to DISABLE and the BLOWER switch to OFF		
	(2) On the tuning drive in the range receiver-transmitter, adjust FREQ MTR TRIM MAG B variable resistor R5. Perform the procedures in table 4-20		

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U, Table 2-27 Daily Countermeasures Control Indicator Checks-TRR-Continued

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Step	Operation	Normal indication	Corrective procedure
6.	Continued		
			(3) Set the BLOWER switch to ON and the ANTENNA switch to NORMAL.
	d Set the MAG SEL switch to B		
	e Using the FREQ switch, tune magnetron A in steps throughout the frequency range. At each stopping point, set the MAG SEL switch to A		
		The pedestal under the magnetron A frequency pips is wider than, and centered about, the frequency pip at any stopping point. (The pedestal may extend beyond the edge of the sweep.)	
			Perform the procedures in step 7 below
	f Set the MAG SEL switch to A.		
	g Repeat e above, substituting B for A		
	h With both magnetrons tuned to the high frequency stops, tune the magnetrons to cause the frequency pips to coincide		
	i Set the MAG SEL switch from A to B and back to A		
		The pedestal does not shift horizontally more than 1/8 inch	
			(1) Perform the corrective procedure in c (1) above
			(2) On the tuning drive in the range receiver-transmitter, adjust FREQ MTR TRIM MAG B variable resistor R7 and repeat c through i above to eliminate any interaction. Perform the procedures in table 4-20
			(3) Repeat the corrective procedure in c (3) above.
		The A SEL or B SEL indicator illuminates in correspondence with the MAG SEL A or MAG SEL B selection.	
	i.1. Set the MAN-AUTO switch to AUTO		Refer to figure 71 1
		The pedestal disappears.	
	j. Proceed to step 8 below		Refer to figure 71 1.
7	Adjust the panoramic sweep pedestal circuits.		
	a Tune magnetron A to the low frequency stop and magnetron B to the high frequency stop.		

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(U) Table 2-27 Daily Countermeasures Control Indicator Checks—TRR—Continued

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Step	Operation	Normal indication	Corrective procedure
7	Continued		
	b. Verify that the MAN—AUTO switch is set to MAN and the MAG SEL switch is set to A.	A pedestal is centered under the magnetron A frequency pips.	On the panoramic sweep generator, adjust the PED POS (LOW) variable resistor. Refer to figure 75.
		The pedestal amplitude is approximately 1/4 inch.	On the panoramic sweep generator, adjust the PED AMP variable resistor. Refer to figure 75.
	c. Set the MAG SEL switch to B.	The pedestal is centered under the magnetron B frequency pips. (The pedestal may extend beyond the edge of the sweep.)	On the panoramic sweep generator, adjust the PED POS (HIGH) variable resistor. Refer to figure 75.
	d. Repeat b and c above until no further adjustments are required.		
	e. Operate the FREQ switch to tune magnetron A to approximately the center of the sweep.		
	f. Set the MAG SEL switch to A.	The pedestal is under the magnetron A frequency pips and is wider than the frequency pips.	On the panoramic sweep generator, adjust the PED L EDGE ADJ variable resistor and the PED R EDGE ADJ variable resistors as required.
	g. Set the MAN—AUTO switch to AUTO and repeat step 6 above. It may be necessary to slightly shift the pedestal using PED POS (LOW), PED POS (HIGH), PED L EDGE ADJ, and PED R EDGE ADJ adjustments to meet all the requirements.		
8.	Check the pan no loss circuit operation.		
	a. Position the TTR antenna coordinates to obtain target video on the lower indicator sweep.		
	b. Operate and hold the PAN switch to NO LOSS.	The target video on the lower sweep disappears.	Refer to figure 88.

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(I) Table 2-27 Daily Countermeasures Control Indicator Checks—TRR—Continued

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Step	Operation	Normal indication	Corrective procedure
8.	Continued	The frequency pips on the upper sweep are still present and stable. Both MAG A and MAG B meters indicate in the green blocks.	Refer to figures 711 and 75. Refer to figure 73.
	c. Release the PAN switch		
	d. Set the MAN—AUTO switch to MAN.		
9.	Deenergize the A and B transmitters.		
	a. Rotate the MOD A HV and MOD B HV knobs fully counterclockwise		
	b. Depress the MAG A HV OFF and MAG B—HV OFF switches.		

(U) Table 2-28 Daily Automatic Channel Selector Checks—TRR

**UNCLASSIFIED**

Step	Operation	Normal indication	Corrective procedure
1	Prepare for the automatic channel selector (ACS) checks.		
	a Perform the procedures in table 2-1		
	b On the range radar power control indicator, set the switches as indicated		
	Switch	Setting	
	TEST—OPERATE	TEST	
	MAG SEL	B	
	FREQ A—B	B	
	RANGE ZERO	OFF	
	AUTO—MAN	MAN	
	PULSE	LONG	
	NOISE OUTPUT	RADAR	
	REC INPUT	NOISE LAMP	
	c Operate the FREQ switch to tune MAG B for an indication of approximately 3.2 on the FREQ meter		
	d Set the MAG SEL switch to A and the FREQ A—B switch to A		
	e Operate the FREQ switch to tune MAG A for an indication of approximately 2.8 on the FREQ meter		
	f On the TRR IF test generator verify that the OSC switch is set to OFF		
2.	Perform the ACS checks.		
	a On the ACS unit, set the METER MONITOR switch to IN LEV		
	b Momentarily operate the ACS SENSITIVITY switch to the X10 position		

<sup>1</sup>Omit this step if the checks in the preceding tables have been performed in sequence

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(U) Table 2-28. Daily Automatic Channel Selector Checks—TRR—Continued

**UNCLASSIFIED**

Step	Operation	Normal indication	Corrective procedure
2.	Continued		
		The ACS meter indicates a value within the limits of 140 and 160.	<p>(1) Operate the FREQUENCY DCR—INCR switch to slightly change the A magnetron frequency.</p> <p>(2) Perform the procedures in table 4-25, steps 2 and 3</p>
	c. Set the METER MONITOR switch to OFF		
	d. On the range radar power control indicator, set the NOISE OUTPUT switch to OFF		
	e. Momentarily depress the NOISE LAMP—ON switch	The TEST 1 indicator on the ACS unit is extinguished.	<p>(1) Perform the procedures in table 4-25, step 7a through d. Repeat e above.</p> <p>(2) Perform the procedures in table 4-25</p>
		The TEST 2 indicator on the ACS unit is extinguished (flickering permissible).	
			Perform the procedure in table 4-25 step 5b through e
	f. On the ACS unit, note the ACS attenuator switch settings, then remove 6 db.	The TEST 2 indicator is illuminated.	
			Add 6 db to the ACS attenuator and perform the procedures in table 4-25, step 5b through e.
	g. Return the ACS attenuator switches to the settings noted in f above		
	h. On the range radar power control indicator, set the MAG SEL switch to B.	On the countermeasures control indicator, the A SEL indicator is extinguished and the B SEL indicator is illuminated.	Refer to figure 71.1.
	i. On the range radar power control indicator, set the AUTO—MAN switch to AUTO.	On the countermeasures control indicator, the A SEL indicator is illuminated and the B SEL indicator is extinguished.	Perform the procedures in table 4-25.

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(U) Table 2-28 Daily Automatic Channel Selector Checks THH—Continued

**UNCLASSIFIED**

Step	Operation	Normal indication	Corrective procedure
3.	<b>Reestablish the switch positions.</b>		
	On the range radar power control-indicator, set the switches as indicated.		
	<i>Switch</i>	<i>Setting</i>	
	TEST--OPERATE	OPERATE	
	REC INPUT	ANT	
	MAG SEL	A	
	AUTO--MAN	MAN	

(U) Table 2-29 Daily Remote Switching Checks—THH and TRR

**UNCLASSIFIED**

Step	Operation	Normal indication	Corrective procedure
1.	<b>Check the remote transmitter control local-remote operation.</b>		
	a. On the remote transmitter control, set the LOC-REM switch to LOC.		
	On the remote transmitter control, the back lighting for all switches is illuminated.		Verify that the DIMMER control is fully clockwise.
			Refer to figure 65.
	b. Set the LOC-REM switch to REM.		
	The back lighting for all switches extinguishes.		Refer to figure 65.
2.	<b>Check the TRR test-operate indicator.</b>		
	a. On the range radar power control-indicator, set the TEST-OPERATE switch to TEST.		
	The TEST indicator on the countermeasures control-indicator illuminates.		Refer to figure 89.
	b. Set the TEST--OPERATE switch to OPERATE.		
	The TEST indicator extinguishes.		Refer to figure 89.

(U) Table 2-30 Daily Track Data Processor Checks

**UNCLASSIFIED**

Step	Operation	Normal indication	Corrective procedure
1.	<b>Prepare for the track data processor checks.</b>		
	a. Perform the procedures in table 2-1. <sup>1</sup>		
	b. Insure that the PLX CORRECTION switch on the range synchronizer is set to NORM.		

<sup>1</sup>Omit this step if the checks in the preceding tables have been performed in sequence.**CONFIDENTIAL**

1U, Table 2-30. Daily Track Data Processor Checks—Continued

**UNCLASSIFIED**

Step	Operation	Normal indication	Corrective procedure										
1.	<b>Continued</b>												
	c On the range radar power control indicator, set the TEST OPERATE switch to TEST and the RANGE ZERO switch to OFF												
	d On the track data processor, verify that the switches are set as indicated.												
	<table border="0"> <thead> <tr> <th>Switch</th><th>Setting</th></tr> </thead> <tbody> <tr> <td>MODE SWITCH</td><td>TACTICAL</td></tr> <tr> <td>BANK SELECTOR</td><td>BANK 1</td></tr> <tr> <td>TRR/TTR PARALLAX (YDS)</td><td>(Per site requirement)</td></tr> <tr> <td>MTR/TTR PARALLAX (YDS)</td><td>(Per site requirement)</td></tr> </tbody> </table>	Switch	Setting	MODE SWITCH	TACTICAL	BANK SELECTOR	BANK 1	TRR/TTR PARALLAX (YDS)	(Per site requirement)	MTR/TTR PARALLAX (YDS)	(Per site requirement)		
Switch	Setting												
MODE SWITCH	TACTICAL												
BANK SELECTOR	BANK 1												
TRR/TTR PARALLAX (YDS)	(Per site requirement)												
MTR/TTR PARALLAX (YDS)	(Per site requirement)												
	e On the missile track control drawer, set the TEST switch to TEST												
2.	<b>Check the dc power.</b>												
	On the coder-track data processor observe the TRACK DATA PROCESSOR +15V 15V +12V, -12V, +5V, and -5V indicators and fuses.												
	<b>The green LED indicators are illuminated.</b>		Perform the TDP voltage measurements in table 5-30, step 5										
			Refer to figure 78.1										
	<b>The fuse indicators are not illuminated.</b>		Refer to figure 78.1										
3.	<b>Check the track data processor operation.</b>												
	a. Observe the track data processor indicators												
	<b>The RUN indicator is illuminated.</b>		Refer to figure 78.1.										
	<b>The NON-TACTICAL indicator is not illuminated. On the target track control console upper center door, the TDP FAULT indicator is not illuminated</b>												
	<b>The POSITION DIFFERENCE (YDS) indicators are not illuminated.</b>												
			(1) On the track data processor momentarily operate the RESET switch										
			(2) Perform the procedures in table 5-29, steps 3 and 4.										
	<i>Note: The track data processor generates error messages which are displayed on the POSITION DIFFERENCE indicators. An error message is always indicated by <math>\Delta x</math> and <math>\Delta y</math> on the EE</i>												
	b. On the range radar power control indicator, set the RANGE ZERO switch to TEST												
	<b>The track data processor POSITION DIFFERENCE (YDS) indicators indicate as follows:</b>												
	$\Delta h = C0$												
	$\Delta x = 66$												
	$\Delta y = 40$												
			Perform the procedures in table 5-29, step 4.										

**CONFIDENTIAL***(L) Table 2-30 Daily Track Data Processor Checks—Cont. contd***UNCLASSIFIED**

Step	Operation	Normal indication	Corrective procedure
3.	<b>Continued</b>		
		The NON-TACTICAL and RUN indicators are illuminated.	Refer to figure 78.1
	c. On the range radar power control indicator set the TEST OPERATE switch to OPERATE.	The NON-TACTICAL indicator is not illuminated.	Refer to figure 78.1
		The RUN indicator is illuminated.	Refer to figure 78.1
		The POSITION DIFFERENCE (YDS) indicators are not illuminated	On track data processor momentarily operate the RESET switch. If no data is received from the TTR RSPU or MTR RSPU, the POSITION DIFFERENCE (YDS) indicators will indicate as follows: $\Delta h = 00$ , $\Delta x = EE$ , and $\Delta y = 06$ . If the problem still exists, perform the procedures in table 5-29, steps 3 and 4
4.	<b>Reestablish the switch positions.</b>		
		On the range radar power control indicator set the RANGE ZERO switch to OFF	

*(L) Table 2-31 Daily Remote Synchronization Checks***UNCLASSIFIED**

Step	Operation	Normal indication	Corrective procedure
1.	<b>Prepare for the remote synchronization checks.</b>		
	a. Perform the procedures in table 2-1. <sup>1</sup>		
	b. Verify that the LOPAR and HIPAR daily power checks have been performed by the appropriate acquisition operators.		
	c. Verify that the LOPAR and HIPAR antennas are both rotating.		
	d. In the director station, set the TEST—NORM switch on the acquisition video mixer to TEST		
	e. Verify that the battery control console acquisition range is set to less than 220,000 yards		
2.	<b>Check the LOPAR/TTR synchronization.</b>		
	a. On the battery control console, set the LOPAR—HIPAR/AAR switch to LOPAR		
		On the pulse generator indicator in the TTR console, the green LOPAR indicator is illuminated.	Refer to figure 65.

<sup>1</sup>Omit this step if the checks in the preceding tables have been performed in sequence**CONFIDENTIAL**

(U) Table 2-31 Daily Remote Synchronization Checks-Continued

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Step	Operation	Normal indication	Reference procedure
2.	Continued		
	b Observe the B-scope presentation on the TTR console		
	A focused presentation is present.		Adjust the B-scope front panel controls as required.
			Refer to figure 34, TM 9-1430-1254-20/2
	The horizontal acquisition range circle is continuous and stable.		On the TTR track synchronizer, verify that the TEST switch is set to NORMAL. Adjust the FREQ LOPAR control maximum clockwise, then slowly counterclockwise just until the range circle becomes continuous and stable. Adjust the control approximately an additional 1/8 turn counterclockwise.
			Refer to figure 34, TM 9-1430-1254-20.2
3.	Check the HIPAR/TTR synchronization.		
	a On the battery control console, set the LOPAR—HIPAR AAR switch to HIPAR AAR		
	On the pulse generator-indicator, the green HIPAR indicator is illuminated.		Refer to figure 65
	b. Observe the B-scope presentation.		
	The horizontal acquisition circle is continuous and stable.		On the TTR track range synchronizer, adjust the FREQ HIPAR control maximum clockwise, then slowly counterclockwise just until the range circle becomes continuous and stable. Adjust the control approximately an additional 1/8 turn counterclockwise.
			Refer to figure 34, TM 9-1430-1254-20.2
4.	Restore the system to the desired status.		
	a On the acquisition video mixer, set the TEST NORM switch to NORM		
	b Have the appropriate acquisition operators return the LOPAR and HIPAR to the desired status.		

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(U) Table 2-32. Daily Simultaneous Tracking Checks—TTR, MTR, and TRR

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Step	Operation	Normal indication	Corrective procedure
1.	Perform the initial simultaneous tracking checks. Perform the procedures in table 2-1 <sup>1</sup>		
2.	Prepare the TTR for simultaneous tracking checks.		
	a.	On the target antenna control group, set the TEST switch to operate (down) and the RANGE TRACK switch to TTR	
	b.	Set the magnetron frequency to the frequency used to perform the TTR range zero checks.	
3.	Prepare the MTR for simultaneous tracking checks.		
	a.	On the missile track control drawer, set the switches as indicated	
		Switch	Setting
		TEST	TEST
		DISABLE	down
		RANGE	NORMAL
	b.	On the missile error voltage meter, set the BEACON-TARGET switch to TARGET	
4.	Prepare the TRR for simultaneous tracking checks.		
	On the target range synchronizer, set the PLX CORRECTION switch to NORMAL. On the range radar power control indicator, set the switches as indicated		
		Switch	Setting
		TEST-OPERATE	TEST
		RANGE ZERO	OFF
		AUTO-MAN	MAN
		RADAR GAIN	LIN-LOG
		REC INPUT	ANT
5.	Prepare the track data processor for simultaneous tracking checks.		
	a.	On the track data processor, set the BANK SELECTOR switch to BANK 1 and MODE SWITCH to SIM TRACK	
		The RUN and NON-TACTICAL indicators are illuminated. No error messages are present on the $\Delta x$ , $\Delta y$ , and $\Delta h$ indicators.	
		Perform the procedures in table 2-30	
	b.	Verify that the required TRR/TTR parallax and MTR/TTR parallax are set into the PARALLAX switches.	
6.	Energize the TTR, MTR, and TRR transmitters.		
	a.	On the target track control power supply, rotate the HV SUPPLY knob to START and depress the HV SUPPLY-ON switch. Adjust the HV SUPPLY knob to obtain an indication in the center of the MAGNETRON meter white block	

<sup>1</sup> Omit this step if the checks in the preceding tables have been performed in sequence.**CONFIDENTIAL**

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Step	Operation	Normal indication	Corrective procedure
6.	<b>Continued</b>		
	b. On the missile track control-power supply, rotate the HV SUPPLY knob to START and depress the HV SUPPLY ON switch. Adjust the HV SUPPLY knob to obtain an indication of 3 ma on the MAGNETRON meter.		
	c. On the TRR countermeasures control-indicator, rotate the MOD A HV and MOD B HV knobs fully counterclockwise, and depress the MAG A HV and the MAG B HV switches. Adjust the MOD A HV and MOD B HV knobs to obtain an indication in the center of the green block on the MAG A and MAG B meters.		
7.	<b>Acquire and track a moving target with both tracking radar systems.</b>		
	<i>Note:</i> To expedite this check, targets may be designated from the battery control console.		
	a. Acquire and track, in the automatic mode, the same target with the TTR and MTR at a range greater than 20,000 yards. For the target to be considered valid, the MTR RECEIVED SIGNAL and TTR TARGET SIGNAL STRENGTH meters should indicate an average value greater than 2 and 20, respectively. The target elevation angle for each radar should be greater than 25 mils above terrain and physical object masking.		
	b. If possible, the selected target should be acquired in a different quadrant each day.		
8.	<b>Perform the simultaneous tracking check with the MTR and TTR.</b>		
	a. On the target track control power supply, set the TTR PULSE WIDTH switch to SHORT.		
	b. Observe the $\Delta x$ , $\Delta y$ , and $\Delta h$ indicators on the track data processor.		
	In each coordinate, at least 80 percent of the indications are within the tolerance of 0.5 yards per each 1,000 yards of the target range.		
		(1) Verify that the target meets the requirements given in step 7a above.	
		(2) Perform the procedures in table 4-27.	
	c. Set the TTR PULSE WIDTH switch to LONG. Repeat b above.		
9.	<b>Perform the simultaneous tracking test using the MTR, TTR, and TRR.</b>		
	a. On the range radar power control-indicator, set the MAG SEL switch to A and the PULSE switch to SHORT.		
	b. On the target antenna control group, set the RANGE TRACK switch to TRR.		
	c. Observe the $\Delta x$ , $\Delta y$ , and $\Delta h$ indicators on the track data processor.		
	In each coordinate, at least 80 percent of the indications are within the tolerance of 0.5 yards per each 1,000 yards of the target range.		
		(1) Verify that the target meets the requirements given in step 7a above.	
		(2) Perform the procedures in table 2-24.	
		(3) Perform the procedures in table 4-27.	
	d. Set the PULSE switch to LONG and repeat c above.		



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*rl Table 2.12 Data Simultaneous Tracking Checks-TTR, MIR and TPR Continued***UNCLASSIFIED**

Step	Operation	Normal indication	Corrective procedure
9.	Continued		
	e.	Set the MAG SEL switch to B and repeat c above	
	f.	Set the PULSE switch to SHORT and repeat c above	
	g.	Terminate tracking of the target.	
10.	(Deleted)		
11.	Deenergize the transmitters.		
	a	On the target track control power supply, rotate the HV SUPPLY knob to START and depress the HV SUPPLY-OFF switch.	
	b	On the missile track control power supply, rotate the HV SUPPLY knob to START and depress the HV SUPPLY-OFF switch	
	c	On the countermeasures control indicator, rotate the MOD A HV and MOD B HV knobs fully counterclockwise. Depress the MAG A-HV and MAG B-HV switches.	
12.	Reestablish the switch positions.		
	a	On the target antenna control group, set the RANGE TRACK switch to TTR and the TEST switch to TEST	
	b	On the range radar power control indicator, set the TEST-OPERATE switch to OPERATE	
	c	On the track data processor, set MODE SWITCH to TACTICAL	
	d	On the missile error voltage monitor, set the BEACON TARGET switch to BEACON	

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## CHAPTER 3 (C)

### WEEKLY CHECK PROCEDURES

*Note:* In some instances, the weekly check may be the same as a daily check and is not listed in this chapter. Refer to the weekly listing in the table of contents for a sequential listing of all weekly check procedures to be performed.

(U) Table 3-01 Weekly Power Checks

#### UNCLASSIFIED

Step	Operation	Normal indication	Corrective procedure
	Perform the procedures in table 2-1		

(U) Table 3-2 Weekly Pressurization and Dehumidification Checks-TTR, MTR, and TRR

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Step	Operation	Normal indication	Corrective procedure
	<i>Note:</i> This procedure is applicable to the TTR, MTR, and TRR using controls and indicators peculiar to each.		
1	Prepare for the pressurization and dehumidification checks.		
	a.	Perform the procedures in table 2-2, steps 1, 2a, and 3a.	
	b.	Check the compressor motor operation.	
		The compressor motor operates when the pressure meter indicates a value between the limits of 9 and 12 (MTR and TTR).	
			Refer to figure 16 (MTR).
			Refer to figure 47 (TTR).
		The compressor motor operates when the STORAGE PRESS meter indicates a value between the limits of 44 and 54 (TRR).	
			<b>Warning:</b> 120 vac is present on the fuses located near the OPERATING microswitch on the pressurization unit.
			If the power indicator light illuminates and the compressor motor does not run, operate the reset on the OPERATING microswitch (located behind the fuses).
			Refer to figure 73 (TRR).
		The compressor motor stops running when the pressure meter indicates a value between the limits of 13 and 17 (MTR and TTR).	
			Refer to figure 16 (MTR).
			Refer to figure 47 (TTR).
		The compressor motor stops running when the STORAGE PRESS meter indicates a value between 58 and 68 (TRR).	
			Refer to figure 73 (TRR).

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1. *Check the TTR and MTR waveguide leakage*

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Step	Operation	Normal indication	Corrective procedure
2	Check the TTR and MTR waveguide leakage		
	a. Set the compressor power ON-OFF switch to OFF just after the motor stops running. After 2 minutes, observe the pressure meter.	The indication does not decrease to less than 10 (MTR and TTR).	*Check the waveguide system for leaks.
	b. Set the power ON-OFF switch to ON.		
3	Check the TRR waveguide leakage.		
	a. Note the compressor-dehydrator OUTLET PRESS meter.	The OUTLET PRESS meter indicates a value between the limits of 20 and 25.	Refer to figure 73.
	b. Observe the range receiver-transmitter waveguide pressure meter.	The waveguide pressure meter indication is within 4 of the indication noted in a above.	*Check for waveguide leaks.
4	Check the humidity.		
	Observe the HUMIDITY INDICATOR.	The HUMIDITY INDICATOR is dark blue.	Perform the procedures in steps 5 and 7 below (TTR and MTR). Perform the procedures in steps 6 and 7 below (TRR).
	<i>Note: If the conditions of step 4 are met, omit steps 5 through 8 below.</i>		
*5	Purge the waveguide on the TTR and MTR.		
	a. Check the transparent air tubes to see if water is present. Remove any water found.		
	b. Break the waveguide connection at the magnetron.		
	c. Periodically allow air pressure to build up and discharge by opening and closing the waveguide section.		
	d. Continue the procedure in c above for 10 to 15 minutes.		
	e. Reconnect the waveguide to the magnetron.		
*6	Purge the waveguide on the TRR.		
	a. Disconnect the quick-disconnect waveguide section between the RF unit and the reflector.		
	b. Periodically allow the air pressure to build up and discharge by opening and closing the waveguide section.		
	c. Continue the procedure in b above for 10 to 15 minutes.		
	d. Reconnect the quick-disconnect waveguide section between the RF unit and the reflector.		

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(U) Table 3-1. Weekly Pressurization and Dehumidification Checks—TTR, MTR, and TRR (Continued)

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Step	Operation	Normal indication	Corrective procedure
7.	Recheck the humidity. Observe the HUMIDITY INDICATOR	The HUMIDITY INDICATOR is dark blue.	Perform the procedures in step 8a, b, and d below (TTR and MTR) Perform the procedures in step 8a, c, and d below (TRR).
	<i>Note:</i> If the conditions of step 7 are met, omit step 8 below		
8.	Dry the equipment.		
a.	Repeat step 5a and b above for the TTR and MTR, or step 6a above for the TRR		
	<i>Note:</i> One cycle takes approximately 3 hours; tanks transfer approximately every 90 minutes.		
b.	Let the TTR and MTR dehumidifiers operate for one complete cycle		Refer to figure 16 (MTR) Refer to figure 47 (TRR)
	<i>Note:</i> Dehydrator cycling should occur every 90 seconds of compressor motor operation. During dehydrator cycling, the rush of air is audible.		
c.	Let the TRR compressor-dehydrator operate approximately 4 hours. Insure that the dehydrator is cycling		Refer to figure 73 (TRR).
d.	Repeat steps 5c and 7 above for the MTR and TTR, or steps 6d and 7 above for the TRR		
9.	Return the equipment to normal operation.		
a.	Set the BLOWER switch to ON		
b.	Set the ANTENNA switch to NORMAL.		

(U) Table 3-1.1. Weekly Leveling Checks—TTR, MTR, and TRR

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Step	Operation	Normal indication	Corrective procedure
	Perform the procedures in table 2-3.		

(U) Table 3-2. Weekly Presentation Checks—TTR

**UNCLASSIFIED**

Step	Operation	Normal indication	Corrective procedure
1.	Perform the procedures in table 2-4.		

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*(U), Table 3.2. Weekly Presentation Checks-TTR-Continued***UNCLASSIFIED**

Step	Operation	Normal indication	Corrective procedure
2.	Prepare for additional checks.		
a	On the target track control-power supply, set the AGC-MANUAL switch to MANUAL and adjust the GAIN control fully counterclockwise		
b	On the target antenna control group, set the TEST switch to TEST		
3	Check the elevation indicator +H <sub>T</sub> sweep displacement.		
a	Position the TTR antenna elevation to 0 mls		
b	Set the TTR range to 42,420 yards.		
c	Have the computer operator perform the procedures in d through f below		
d	Energize the computer as prescribed in the power checks in TM 9-1430-1251-12-1		
e	On the keyboard/display, enter 6 and depress CR.		
f	Enter DFL and depress CR		
g	On the elevation indicator, set the NOR-H <sub>T</sub> switch to H <sub>T</sub> and observe the elevation indicator		
		The height graticule is illuminated	Refer to figure 51
		The H <sub>T</sub> LED display indication is between -100 and 100.	Recheck the setting of the TTR range and antenna elevation
		The lower sweep is coincident with the bottom etched mark on the height graticule	On the elevation target video amplifier, adjust HT ZERO variable resistor R36
h.	Position the antenna elevation to 800 mls.		
		The H <sub>T</sub> LED display indication is between 89,900 and 90,100.	Recheck the setting of the TTR range and antenna elevation
		The lower sweep is coincident with the upper etched mark on the height graticule.	On the elevation target video amplifier, adjust 90K SF variable resistor R31. If the graticule height cannot be obtained, adjust LIMIT variable resistor R34 fully clockwise. Readjust R31
i	If R34 was adjusted, adjust LIMIT variable resistor R34 until the upper sweep just starts to lower		
j	Set the NOR-H <sub>T</sub> switch to NOR and the AGC-MANUAL switch to AGC		
k	Notify the computer operator that the checks have been completed		

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(U) Table 3-3. Weekly Transmitter Checks-TTR

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Step	Operation	Normal indication	Corrective procedure
1.	Perform the daily transmitter checks.		
	Perform the procedures in table 2-5, steps 1 through 4		
2	Check the voltages at the antenna.		
	a On the target track control power supply, set the TTR PULSE WIDTH switch to SHORT		
	b At the target track antenna support base, set test switch S10 to the positions indicated below. Observe that test meter M1 indications are within the limits specified		
	(1)	+350V	3.20 to 3.70
	(2)	-500V	4.70 to 5.20
	(3)	-250V	2.40 to 2.60
	(4)	+320V	3.10 to 3.30
	(5)	+2500V	2.30 to 2.70
	(6)	+5000V	4.85 to 5.35
	(7)	V1	2.50 to 4.50

Refer to figure 59

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Step	Operation	Normal indication	Service procedure
2.	<b>Continued</b>		
	c. Set the TTR PULSE WIDTH switch to LONG and test switch S10 to V1	Test meter M1 indicates a value between 1.50 and 3.20.	Refer to figure 47
	d. On the target antenna control group, depress the MP switch	The MP—ON indicator light illuminates.	Refer to figure 65
		Test meter M1 indicates a value between 1.70 and 3.40.	Refer to figure 47
	e. Set the TTR PULSE WIDTH switch to SHORT	Test meter M1 indicates a value between 1.50 and 3.00.	Refer to figure 47
	f. Set test switch S10 to OFF and the TTR PULSE WIDTH switch to LONG		
	g. Set the ANTENNA switch to DISABLE.		
	h. Set the BLOWER switch to OFF		
3.	<b>Deenergize the TTR transmitter.</b>		
	a. On the target track control-power supply, rotate the HV SUPPLY knob to START and depress the HV SUPPLY —OFF switch.		
	b. Depress the MP switch.	The MP—OFF indicator light illuminates.	Refer to figure 65
4.	<b>Calibrate the power monitor</b>		
	a. On the power monitor in the target track RF control-power supply group, set the ADJ—MEAS switch to V.	The power monitor test meter indicates V (full scale).	Adjust the V ADJ knob on the power monitor Refer to figure 47
	b. Set the ADJ—MEAS switch to $\infty$ .	The power monitor test meter indicates $\infty$ .	Adjust the $\infty$ ADJ knob for a meter indication as close to $\infty$ as possible. Refer to figure 47
	c. Set the ADJ—MEAS switch to 0.	The power monitor test meter indicates 0 (full scale).	Adjust the 0 ADJ knob. Refer to figure 47
	d. Set the ADJ—MEAS switch to MEAS.		

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(U) Table 3-3 Weekly Transmitter Checks—TTR—Continued  
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Step	Operation	Normal indication	Corrective procedure
5.	<b>Energize the TTR transmitter.</b> Rotate the HV SUPPLY knob to START and depress the HV SUPPLY—ON switch. Adjust the HV SUPPLY knob to obtain an indication in the center of the white block on the MAGNETRON meter.		
6.	<b>Check the reverse current diode.</b> a. With a multimeter set at the 100 milliamperes scale, monitor the current between TP1 and TP2 in the target track receiver-transmitter. <b>The meter indicates a value greater than 0 but less than 70 milliamperes.</b> Refer to figure 47. b. Disconnect the multimeter. <i>Note:</i> The procedures in steps 7 and 8 below are to be performed at the low endpoint and high ends of the frequency band. Insure that the indication on the MAGNETRON meter is maintained in the center of the white block at each frequency setting.		
7.	<b>Check the transmitted power in the long pulse mode.</b> a. On the target track control-power supply, verify that the TTR PULSE WIDTH switch is set to LONG. b. Observe the power monitor test meter. <i>Note:</i> The meter indication is in terms of db down from 54.5, with 54.5 dbm being a full scale 0 indication. <b>The meter indication is not greater than 2 db. An indication beyond 0 (to the right) is acceptable.</b> Set the SCALE—db switch to bring the indication as near 0 (full scale) as possible. Repeat the procedures in steps 3a, 4, 5, and 7 above. c. Add the indication on the power monitor test meter to the indication of the SCALE—db switch. <b>The final db indication is less than 2 db at midband and does not exceed 3 db at the low end and high end of the band.</b> Perform the procedures in table 5-13 and repeat step 7. Perform the procedures in table 5-14. Refer to figure 47. d. Depress the MP switch on the target track control console. <b>The MP—ON indicator illuminates.</b> Refer to figure 65. e. Observe the indication on the power monitor test meter. <b>The meter indication is not greater than 2 db. An indication beyond 0 (to the right) is acceptable.</b> Set the SCALE—db switch to bring the indication as near 0 (full scale) as possible. Repeat steps 3a, 4, 5, and 7 above.		

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(U) Table 3-3 Weekly Transmitter Checks: TTR—Continued

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Step	Operation	Normal indication	Corrective procedure
7.	<b>Continued</b>		
	f. Add the indication on the power monitor test meter to the indication of the SCALE—db switch.	<b>The final db indication is less than 2 db at midband and does not exceed 3 db at the low end and high end of the band.</b>	Perform the procedures in table 5-13, and repeat step 7.  Refer to figure 47
	g. Depress the MP switch on the target track control console	<b>The MP—OFF indicator illuminates.</b>	  Refer to figure 65
8.	<b>Check the transmitted power in the short pulse mode.</b>		
	a. On the target track control power supply, set the TTR PULSE WIDTH switch to SHORT. Observe the indication on the power monitor test meter	<b>The meter indication is between 0 and 3 db.</b>	Set the SCALE—db switch to bring the indication as near 0 (full scale) as possible. Repeat the procedures in steps 3a, 4, 5, and 8 above.
	b. Add the indication on the power monitor test meter to the indication of the SCALE—db switch	<b>The final db indication is less than 10.5 db at midband and does not exceed 11.5 db at the low end and high end of the band.</b>	Perform the procedures in table 5-14.  Refer to figure 47
	c. Depress the MP switch on the target track control console	<b>The MP—ON indicator illuminates.</b>	  Refer to figure 65.
	d. Observe the indication on the power monitor test meter	<b>The meter indication is between 0 and 2 db.</b>	Set the SCALE—db switch to bring the indication as near 0 (full scale) as possible. Repeat the procedures in steps 3a, 4, 5, and 8 above.
	e. Add the indication on the power monitor test meter to the indication of the SCALE—db switch.		

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(U) Table 3-3 Weekly Transmitter Checks-TTR-Continued

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Step	Operation	Normal indication	Corrective procedure
8.	Continued		
		The final db indication is less than 3 db at midband and does not exceed 4 db at the low end and high end of the band.	Perform the procedures in table 5-14 Refer to figure 47
	f. Set the SCALE-db switch to 0		
	f 1. Set the ADJ MEAS switch to V		
	g. Set the BLOWER switch to ON		
	h. Set the ANTENNA switch to NORMAL		
	i. Depress the MP switch		
		The MP-OFF indicator illuminates.	Refer to figure 65
9.	Deenergize the TTR transmitter.		
	Rotate the HV SUPPLY knob to START and depress the HV SUPPLY-OFF switch		

(U) Table 3.3.1 Weekly Target AFC Checks-TTR

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Step	Operation	Normal indication	Corrective procedure
			Perform the procedures in table 2-6

(U) Table 3-4 Weekly Radar Test Set Group Checks

**UNCLASSIFIED**

Step	Operation	Normal indication	Corrective procedure
1.	Prepare the tracking station for the check.		
	Perform the procedures in table 2-1 <sup>1</sup>		
2.	Prepare the radar test set for the check.		
	a. Verify that the AC POWER switch is set to ON		
	b. Set the FUNCTION switch to CAL.		

<sup>1</sup> Omit this step if the checks in the preceding tables have been performed in sequence**CONFIDENTIAL**

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(U) Table 3-4. Weekly Radar Test Set Group Checks—Continued

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Step	Operation	Normal indication	Corrective procedure
3.	Check the power supply voltages. Note: If the meter indicates $\infty$ for any switch position, set the AC POWER switch to OFF and then to ON to reset overvoltage protection circuits. Set the METER switch to the following Vdc positions in sequence: +15, -15, +5, 48, +30.  The RF POWER dB meter indicates $1 \pm 0.3$ for each switch position.  Refer to figure 92		
4.	Check the automatic leveling. Depress the LAMPS pushbutton switch.  The LEVELING indicator illuminates (green).  Perform the procedures in table 4-3, step 3.  Refer to figures 92 and 93		
5.	Condition the radar test set for remote operation. Set the FUNCTION switch to RMT and the METER switch to 0.		

(U) Table 3-4.1 Weekly Beacon AFC Checks—TTR

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Step	Operation	Normal indication	Corrective procedure
	Perform the procedures in table 2-7		

(U) Table 3-5 Weekly RSPU Checks—TTR and MTR

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Step	Operation	Normal indication	Corrective procedure
1.	Perform RSPU checks for the MTR. a. Perform the procedures in table 2-1. b. (Deleted)		

<sup>1</sup> Omit this step if the checks in the preceding tables have been performed in sequence.**CONFIDENTIAL**

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(U) Table 3-5 Weekly RSPL Checks: TTR and MTR -Continued

**UNCLASSIFIED**

Step	Operation	Normal indication	Corrective procedure
1	Continued		
c	On the MTR RSPL front panel, set the DC SELECT switch to the positions indicated and observe the VOLTS DC meter. Indications are as specified below.		
		Indication (V)	
	Position	From	To
	-5V	4.75	5.25
	12V	10.80	13.20
	15V	13.50	16.50
	28V	22.0	34.0
	40V	36.00	44.00
	150V/3	45.00	55.00
	+26V	23.40	28.60
	+15V	13.50	16.50
	+12V	10.80	13.20
	+5V	4.75	5.25
			Refer to table 5-9
			Refer to table 6-2
			Refer to table 6-2
			Refer to table 2-1
			Refer to table 6-2
			Refer to table 2-1
			Refer to table 6-2
			Refer to table 6-2
			Refer to table 6-2
			Refer to table 5-9.
d	Set the DC SELECT switch to OFF.		
e	Observe COORD DISPLAY.		
	Fault LED (decimal point at extreme left of display) is extinguished.		
		(1) At the director station, verify that the computer DC POWER switch is set to ON.	
		(2) On the MTR RSPL front panel, set the MODE switch to MNL and then to OPR.	
		(3) Perform the procedures in table 6-4.	
f	Set the TEST VIDEO switch to OFF.		
g	Set the MODE switch to TEST.		
h	Set the MICROPROCESSOR SELECT switch to PCS.		
i	Set the TEST ADDRESS thumbwheel switches to 6082, and observe the TEST MONITOR LED indicators.		
	All 24 LED indicators are extinguished (logic zeros).		
		Perform the procedures in table 6-4.	
j	Set the TEST ADDRESS thumbwheel switches to 6083, and observe the TEST MONITOR LED indicators.		
	All 24 LED indicators are extinguished (logic zeros).		
		Perform the procedures in table 6-4.	
k	Set the COORD SELECT switch to D-FCN.		

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(U) Table 3-5 Weekly RSPU Checks-TTR and MTR-Continued

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Step	Operation	Normal indication	Corrective procedure
1.	Continued		
	Note: In the power observation should be made immediately after the fault LED goes out and extinguishes before the indication has drifted from its initial value.		
	i.	Set the MODE switch to MNL and then to OPR.	
m	Observe COORD DISPLAY		
	The readout indicates 32,767 minus BEACON DELAY + 2 yards.		
	Perform the procedures in table 6-4.		
n	Verify that the ELEVATION BORESIGHT, AZIMUTH BORESIGHT, and BEACON DELAY thumbwheel switches are set to prerecorded values.		
o	Depress the ENTER pushbutton for each setting in n above and observe COORD DISPLAY for each thumbwheel switch setting.		
	The COORD DISPLAY readout equals the thumbwheel setting in each case.		
	Perform the procedures in table 6-4.		
2.	Perform RSPU checks for the TTR		
a.	(Deleted)		
b.	On the target track control power supply, set the TTR PULSE WIDTH switch to LONG		
c.	On the TTR RSPU front panel, set the DC SELECT switch to the positions indicated and observe the VOLTS DC meter. Indications are as specified below.		
	Indication (V)		
	Position	From	To
	-5V	4.75	5.25
	-12V	10.80	13.20
	-15V	13.50	16.50
	-28V	22.0	34.0
	-40V	36.00	44.00
	150V/3	45.00	55.00
	+28V	23.40	28.60
	+15V	13.50	16.50
	+12V	10.80	13.20
	+5V	4.75	5.25
			Refer to table 5-9
			Refer to table 6-2
			Refer to table 6-2.
			Refer to table 2-1
			Refer to table 6-2
			Refer to table 2-1
			Refer to table 6-2
			Refer to table 6-2.
			Refer to table 6-2
			Refer to table 5-9
d	Set the DC SELECT switch to OFF		
e	Observe COORD DISPLAY		

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(U), Table 3-5 Weekly RSPU Checks TTR and MTR -Continued

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Step	Operator	Normal indication	Corrective procedure
2.	Continued	Fault LED (decimal point at extreme left of display) is extinguished	<p>(1) At the director station, verify that the computer DC POWER switch is set to ON</p> <p>(2) On the TTR RSPU front panel, set the MODE switch to MNL and then to OPR</p> <p>(3) Perform the procedures in table 6-4.</p>
f.	Set the TEST VIDEO switch to OFF		
g.	Set the MODE switch to TEST		
h.	Set the MICROPROCESSOR SELECT switch to PCS		
i.	Set the TEST ADDRESS thumbwheel switches to 6082, and observe the TEST MONITOR LED indicators.		
		All 24 LED indicators are extinguished (logic zeros).	
		Perform the procedures in table 6-4	
j.	Set the TEST ADDRESS thumbwheel switches to 6083, and observe the TEST MONITOR LED indicators.		
		All 24 LED indicators are extinguished (logic zeros).	
		Perform the procedures in table 6-4	
k.	Set the COORD SELECT SWITCH TO D-FCN		
	Note In steps m and o below the observation should be made immediately after the fault LED (decimal point) extinguishes, before the indication has drifted from its initial value.		
l.	Set the MODE switch to MNL and then to OPR.		
m.	Observe COORD DISPLAY		
		The readout indicates 33,218 minus LONG PULSE DELAY $\pm 2$ yards.	
		Perform the procedures in table 6-4.	
n.	On the target track control-power supply, set the TTR PULSE WIDTH switch to SHORT		
* n 4.	Set the MODE switch to MNL and then to OPR.		
o.	Observe COORD DISPLAY		
		The readout indicates 32,767 minus SHORT PULSE DELAY $\pm 2$ yards.	
		Perform the procedures in table 6-4.	
p.	Verify that the ELEVATION BORESIGHT, AZIMUTH BORESIGHT, SHORT PULSE DELAY, and LONG PULSE DELAY thumbwheel switches are set to prerecorded values		
q.	Depress the ENTER pushbutton for each setting in p above and observe COORD DISPLAY for each thumbwheel switch setting		
		The COORD DISPLAY readout equals the thumbwheel setting in each case.	
		Perform the procedures in table 6-4.	

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(U) Table 3-5.1 Weekly Range System Checks-TTR

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Step	Operation	Normal indication	Corrective procedure
	Perform the procedures in table 2-8		

(U) Table 3-5.2 Weekly Monopulse Receiver Checks-TTR

**UNCLASSIFIED**

Step	Operation	Normal indication	Corrective procedure
	Perform the procedures in table 2-9.		

(U) Table 3-6. Weekly Tracking Servo Checks-TTR

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Step	Operation	Normal indication	Corrective procedure
1.	Prepare for the tracking servo checks.		
	a. Perform the procedures in table 2-1. <sup>1</sup>		
	b. On the target antenna control group, set the switches as indicated.		
	<i>Switch</i>	<i>Setting</i>	
	TEST	TEST	
	MULTI BIN	OFF	
	RANGE TRACK	TTR	
	AGC-LIN-LOG	AGC	
	c. On the target error voltage monitor, set the switches as indicated.		
	<i>Switch</i>	<i>Setting</i>	
	(IF TEST)-ADJ	ADJ	
	RCVR TEST	BIAS	
2	Check the high power servo amplifier (HPSA) balance from the radar control trailer		
	a. In the target antenna control group, connect a test lead between J1 and J2		
	The elevation position displays are not changing.		
	Perform the procedures in table 4-7		
	b. Remove the test lead from J1 and J2, and connect it between J3 and J4		
	The azimuth position displays are not changing.		
	Perform the procedures in table 4-7.		

<sup>1</sup> Omit this step if the checks in the preceding tables have been performed in sequence.**CONFIDENTIAL**

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(U) Table 3-6. Weekly Tracking Servo Checks-TTR-Continued

**CONFIDENTIAL**

Step	Operation	Normal indication	Corrective procedure
2.	Continued		
	c. Remove the test lead from J3 and J4		
3.	Check the dc balance of the servo error converters.		
	a. On the target track control-power supply, set the AGC MANUAL switch to MANUAL and the TTR PULSE WIDTH switch to SHORT. Adjust the GAIN control fully counterclockwise.		
	b. On the error voltage monitor, operate and hold the AZ SENS and EL SENS switches in the HI position.		
		The AZ ANGLE ERROR and EL ANGLE ERROR meters indicate within 1/2 of a small division of zero.	
			On the target azimuth or elevation servo error converter, adjust the SP BAL control to obtain an indication of zero on the meter.
			Refer to figure 53 (azimuth) or 54 (elevation).
	c. Release the AZ SENS and EL SENS switches.		
	d. Set the TTR PULSE WIDTH switch to LONG		

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Step	Operation	Normal indication	Corrective procedure
3.	<b>Continued</b>		
	e. Operate and hold the AZ SENS and EL SENS switches in the HI position	The AZ ANGLE ERROR and EL ANGLE ERROR meters indicate within 1/2 of a small division of zero.	On the target azimuth or elevation servo error converter, adjust the LP BAL control to obtain an indication of zero on the meter. Refer to figure 53 (azimuth) or 54 (elevation).
	f. Release the AZ SENS and EL SENS switches.		
4.	<b>Check the balance of the azimuth angle error modulator in the long pulse mode.</b>		
	a. Set the TTR range to approximately 20,000 yards		
	b. Set the TTR RSPU COORD SELECT switch to A-FCN		
	c. On the target antenna control group, set the azimuth MAN—AID—AUTO switch to AUTO.	The azimuth COORD DISPLAY indication is steady. The two right-hand LED's should be ignored.	On the target azimuth angle error modulator, slowly adjust the MOD BAL control. Refer to figure 53.
	d. Set the azimuth MAN—AID—AUTO switch to MAN		
5.	<b>Check the balance of the elevation angle error modulator in the long pulse mode.</b>		
	a. Position the TTR antenna elevation to approximately 800 mils		
	b. Set the TTR RSPU COORD SELECT switch to E-FCN		
	c. On the target antenna control group, set the elevation MAN—AID—AUTO switch to AUTO.	The elevation COORD DISPLAY indication is steady. The two right-hand LED's should be ignored.	On the target elevation angle error modulator, slowly adjust the MOD BAL control. Refer to figure 54.
	d. Set the elevation MAN—AID—AUTO switch to MAN		
	e. Set the TTR RSPU COORD SELECT switch to D-FCN.		
	f. Set the AGC—MANUAL switch to AGC		

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U Table 3-6. Weekly Tracking Servo Checks—TTR—Continued

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Step	Operation	Normal indication	Corrective procedure
6.	Check the TTR long pulse automatic range tracking.		
a.	On the TTR IF test generator, set the switches as indicated.		
	<i>Switch</i>	<i>Setting</i>	
	OSC	ON	
	MODE	CW	
	SLEW	Center (off)	
	SLEW RATE	50	
	0—90 dB ATTENUATOR	30	
	0—9 dB ATTENUATOR	0	
	PULSE WIDTH	LONG	
b.	On the target track control-power supply, set the IND switch to R.		
c.	On the IF test generator, adjust the FINE and COARSE IF FREQ ADJ controls for a maximum indication on the target error voltage monitor RCVR TEST meter.		
d.	On the TTR IF test generator, set the MODE switch to PULSE and momentarily depress the RANGE PRE-SET switch.		
e.	Set the TTR range to approximately 18,000 yards.		
f.	On the target antenna control group, set the MULTIBIN switch to ON and the range MAN—ACQUIRE AID—TRACK AID—AUTO switch to ACQUIRE AID.		
	The IF test pulse is centered in the range notch.		
			Set the range switch to MAN. Change the TTR range to place the pulse in the range notch. Set the range switch to ACQUIRE AID.
			Refer to figures 52, 54 4, and 65.
g.	On the TTR IF test generator, set the SLEW switch to OUT and the SLEW RATE switch to 500.		
h.	When the IF test pulse is acquired, set the SLEW RATE switch to 2500.		
	<i>Note:</i> To help acquire the IF test pulse, it may be necessary to rotate the range handwheel to establish an aided rate.		
i.	When the IF test pulse is acquired, set the range MAN—ACQUIRE AID—TRACK AID—AUTO switch to AUTO.		
	The IF test pulse remains within the range notch.		
			Refer to figure 52.
j.	When the IF test pulse range equals approximately 100,000 yards, set the IF test generator SLEW RATE switch to OFF and set the range MAN—ACQUIRE AID—TRACK AID—AUTO switch to MAN and then to ACQUIRE AID.		
	The IF test pulse is within the range notch.		
			Adjust the range handwheel to reacquire the IF test pulse.

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Table 3-6. Weekly Tracking Servo Checks—TTR—Continued

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Step	Operation	Normal values are	4. Track to procedure
6.	<b>Continued</b>		
	k. Set the SLEW RATE switch to 50 and the SLEW switch to IN		
	l. Set the SLEW RATE switch to 500		
	m. When the IF test pulse is acquired, set the SLEW RATE switch to 2500		
	<i>Note:</i> To help acquire the IF test pulse, it may be necessary to rotate the range handwheel to establish an aided range.		
	n. When the IF test pulse is acquired, set the range MAN ACQUIRE AID TRACK AID AUTO switch to AUTO.		
	<b>The IF test pulse remains within the range notch.</b>		
			Refer to figure 52
	o. Continue the check until the IF test pulse range is approximately 20,000 yards		
	p. Set the range MAN ACQUIRE AID TRACK AID— AUTO switch to MAN		
	q. Set the SLEW switch to the center (off) position and the SLEW RATE switch to OFF		
7.	<b>Check the TTR short pulse automatic range tracking.</b>		
	a. On the target track control power supply, set the TTR PULSE WIDTH switch to SHORT		
	b. On the IF test generator, set the PULSE WIDTH switch to SHORT and momentarily depress the RANGE PRE-SET switch.		
	c. Set the TTR range to approximately 18,000 yards.		
	d. Set the range MAN ACQUIRE AID— TRACK AID— AUTO switch to ACQUIRE AID		
	<b>The IF test pulse is centered in the range notch.</b>		
			Set the range switch to MAN. Change the TTR range to place the pulse in the range notch. Set the range switch to ACQUIRE AID.
			Refer to figures 52, 54 4, and 55
	e. Repeat step 6g through q above.		
	f. On the IF test generator, set the switches as indicated		
	Switch	Setting	
	OSC	OFF	
	SLEW RATE	OFF	
	SLEW	Center (off)	
	0-90 dB ATTENUATOR	90	
	PULSE WIDTH	LONG	
	g. (Deleted)		
	h. (Deleted)		
8.	<b>Perform the daily tracking servo check procedures in table 2-10.</b>		

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(U, Table 3 7. Weekly Borelight Checks—TTR and MTR)

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Step	Operation	Normal indication	Corrective procedure
	<p>Note: This procedure is the same for the TTR and MTR using the controls and indicators peculiar to each.</p> <p>Note: Perform the procedures in tables 3 6 (TTR) and 3 14, steps 1 through 5 (MTR) before performing the procedures in this table.</p>		
1.	<p>Acquire and lock on the radar test signal with the antenna in the plunged coordinates.</p> <p>a. Perform the procedures in table 2 7, steps 1 through 3 (TTR) or table 2-15, steps 1 and 2 (MTR). In table 2-7 or 2-15, step 2b, use the plunged coordinates of the radar test set. Insure that the radar test set pulse range is less than 20,000 yards.</p> <p>b. On the target antenna control group, set the range MAN—ACQUIRE AID—TRACK AID—AUTO switch to AUTO. Set the elevation and azimuth MAN—AID—AUTO switches to AUTO.</p> <p>A stable pulse is centered in the range notch.</p> <p>Repeat step 1.</p> <p>Refer to figure 34 (MTR) or 65 (TTR).</p>		
2.	<p>Check the alignment of the TTR radar beam.</p> <p>a. Record the azimuth indication. Designate this indication as <math>A_1</math>.</p> <p>b. Record the elevation indication. Designate this indication as <math>E_1</math>.</p> <p>c. Set the azimuth and elevation MAN—AID—AUTO switches and the range MAN—ACQUIRE AID—TRACK AID—AUTO switch to MAN.</p> <p>d. Position the antenna coordinates to the normal coordinates of the radar test set and set the azimuth and elevation MAN—AID—AUTO switches and the range MAN—ACQUIRE AID—TRACK AID—AUTO switch to AUTO.</p> <p>A stable pulse is centered in the range notch.</p> <p>Repeat step 1 above for the normal radar test set coordinates.</p> <p>e. Record the azimuth indication. Designate this indication as <math>A_2</math>.</p> <p>f. If <math>A_1</math> is greater than 3,200 mils, subtract 3,200 mils. If <math>A_1</math> is less than 3,200 mils, add 3,200 mils.</p> <p>g. Subtract <math>A_2</math> from the resultant figure computed in f above.</p> <p>The difference does not exceed 0.1 mil.</p> <p>(1) Calculate <math>A'</math> using the following formula.</p> <p>Note: If <math>A_1</math> is greater than 3,200 mils, subtract 3,200 mils. If <math>A_1</math> is less than 3,200 mils, add 3,200 mils.</p> $A = \frac{(A_1 \pm 3,200) + A_2}{2}$		

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(U) Table 3-7. Weekly Boresight Checks—TTR and MTR—Continued

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Step	Operation	Normal indication	Corrective procedure
2.	Continued		<p>(2) Loosen the securing bolts on each side of the track receiver-transmitter, and adjust the azimuth adjusting screw until the azimuth indication equals A</p> <p>(3) Tighten the securing bolts.</p> <p>(4) Set the azimuth and elevation MAN-AID-AUTO switches and the range MAN-ACQUIRE AID-TRACK AID-AUTO switch to MAN.</p> <p>(5) Repeat steps 1 through 2c above.</p> <p>k Record the elevation indication. Designate this indication as <math>E_2</math>.</p> <p>l Subtract <math>E_1</math> from 3,200 mils.</p> <p>j Subtract <math>E_2</math> from the resultant figure computed in i above.</p> <p>The difference does not exceed 0.1 mil.</p> <p>(1) Calculate E using the following formula:</p> $E = \frac{(3,200 - E_1) + E_2}{2}$ <p>(2) Change the setting of the ELEVATION BORESIGHT switches and momentarily depress the ENTER switch until the calculated E value is indicated. Record the setting of the ELEVATION BORESIGHT switches.</p> <p>(3) Set the azimuth and elevation MAN-AID-AUTO switches and the range MAN-ACQUIRE AID-TRACK AID-AUTO switch to MAN.</p> <p>(4) Repeat steps 1, 2b through d, and 2h through i above.</p> <p>k Set the azimuth and elevation MAN-AID-AUTO switches and the range MAN-ACQUIRE AID-TRACK AID-AUTO switch to MAN.<sup>2</sup></p>
3.	(Deleted)		

<sup>2</sup> Omit this step if the checks in the succeeding tables are to be performed in sequence

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(U) Table 3-7 Weekly Bore-sight Checks-TTR and MTR-Continued

## UNCLASSIFIED

Step	Operation	Normal indication	Corrective procedure
4.	Reestablish the TTR switch positions. <sup>1</sup>		
	a On the target test control, set the SIGNAL LEVEL switch to 70.		
	b On the target error voltage monitor, set the BEACON-TARGET switch to TARGET		
5.	Reestablish the MTR switch positions. <sup>1</sup>		
	On the missile control-indicator group, set the TARGET-STANDBY MISSILE switch to STANDBY and the SIGNAL LEVEL switch to 70.		

<sup>1</sup> Omit this step if the checks in the succeeding tables are to be performed in sequence

(U) Table 3-8 Weekly Telescope Collimation Checks-TTR and MTR

## UNCLASSIFIED

Step	Operation	Normal indication	Corrective procedure
	Note This procedure is the same for the TTR and MTR using the controls and indicators peculiar to each.		
1.	Perform the weekly bore-sight checks.		
	Perform the procedures in table 3-7. <sup>1</sup>		
2.	Perform the telescope collimation in elevation.		
*	a On the antenna support base, set the ANTENNA switch to DISABLE <sup>1</sup>		
	a.1. Install the sighting telescope in the normal position		
*	b. Set the ANTENNA switch to NORMAL. <sup>1</sup>		
	b.1 On the target track control-power supply, set the TTR PULSE WIDTH switch to LONG.		
	c Note and record the indication where the horizontal reticle crosses the elevation target on the radar test set mast.		
	d Plunge the antenna in elevation and rotate it 3,200 mils in azimuth		
	e Lock on the radar test set signal in the plunged elevation quadrant.		
	f Repeat c above.		
	g Algebraically add the indications obtained in c and f above and divide the result by 2. Record the result. (This is the point where the horizontal reticle in the telescope should be if the electrical-mechanical-optical axes are parallel.)		
	h Compare the indication in c above with the value calculated in g above.		

<sup>1</sup> Omit this step if the checks in the preceding tables have been performed in sequence

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L, Table 3.8. Weekly Telescope Collimation Check- TTR and MTR -Continued

## UNCLASSIFIED

Step	Operation	Normal indication	Corrective procedure
2.	Continued	The two points are not separated by more than 1 division	Set the ANTENNA switch to <del>DISABLE</del> . Adjust the elevation adjusting screws on the telescope mount until the sighting telescope reticle moves to the value calculated in g above. Set the ANTENNA switch to <del>NORMAL</del> and repeat the procedures in c through h above.
3	Perform the telescope collimation in azimuth using the target flags on the radar test set (optical perpendicularity).		
a	Note and record the indication where the vertical reticle crosses the azimuth target		
b	Plunge the antenna in elevation and rotate it 3,200 mils in azimuth		
c	Lock on the radar test set in the normal quadrant		
d	Repeat a above.		
e	Algebraically add the indications obtained in a and d above and divide the result by 2. Record this result. (This is the point where the vertical reticle in the telescope should be if the electrical-mechanical-optical axes are parallel.)		
f	Compare the indication in a above with the value calculated in e above	The two points are not separated by more than 1 division.	Set the ANTENNA switch to <del>DISABLE</del> . While still in the normal quadrant, adjust the azimuth adjusting screw on the telescope mount until the sighting telescope reticle moves to the value calculated in e above. Set the ANTENNA switch to <del>NORMAL</del> and repeat the procedures in a through f above.
g	Set the azimuth and elevation MAN-AID-AUTO switches to MAN. Set the range MAN-ACQUIRE AID-TRACK AID-AUTO switch to MAN.		
4.	Return to normal operation.		
a	On the missile control-indicator group, set the TARGET STANDBY-MISSILE switch to STANDBY and the SIGNAL LEVEL switch to 70		
b	On the target test control, set the SIGNAL LEVEL switch to 70		
c	On the target error voltage monitor, set the BEACON-TARGET switch to TARGET		
d	Set the ANTENNA switch to DISABLE.		
e	Return the telescope to storage.		
f	Set the ANTENNA switch to NORMAL.		

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(U) Table 3-8.1 Weekly Lin-Log Receiver Checks-TRK

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Step	Operation	Normal indication	Corrective procedure
	Perform the procedures in table 2-11		

(U) Table 3-8.2 Weekly Presentation Checks- MTR

**UNCLASSIFIED**

Step	Operation	Normal indication	Corrective procedure
	Perform the procedures in table 2-12		

(U) Table 3-9 Weekly Transmitter Checks- MTR

**UNCLASSIFIED**

Step	Operation	Normal indication	Corrective procedure
1.	Perform the daily transmitter checks.		
	Perform the procedures in table 2-13, steps 1 through 4.		
2.	Check the voltages at the antenna.		
	a. At the missile azimuth drive equipment enclosure, set the test switch to the positions indicated below, and observe that the meter indications are within the limits specified		
	(1)	+350V	3.25 to 3.75
	(2)	-500V	4.75 to 5.25
	(3)	-250V	2.40 to 2.60
	(4)	+320V	3.00 to 3.30
	(5)	+2500V	2.40 to 2.60
	(6)	+5000V	4.75 to 5.25
	(7)	V1	0.80 to 2.00
	(8)	OFF	
	Refer to figure 28.		
	b. (Deleted)		
3.	Deenergize the MTR transmitter.		
	On the missile track control power supply, rotate the HV SUPPLY knob to START and depress the HV SUPPLY-OFF switch		
4.	Calibrate the power monitor		
	a. Set the ANTENNA switch to DISABLE and the BLOWER switch to OFF		
	a.1 On the power monitor in the missile track RF control power supply group, set the ADJ-MEAS switch to V		

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(U) Table 3-9 Weekly Transmitter Checks-MTR-Continued

## UNCLASSIFIED

Step	Operation	Normal indication	Corrective procedure
4.	Continued		
		The power monitor test meter indicates V (full scale)	Adjust the V ADJ knob on the power monitor Refer to figure 16.
b.	Set the ADJ-MEAS switch to $\infty$	The power monitor test meter indicates $\infty$ .	Adjust the $\infty$ ADJ knob for a meter indication as close to $\infty$ as possible Refer to figure 16.
c.	Set the ADJ-MEAS switch to 0	The power monitor test meter indicates 0 (full scale).	Adjust the 0 ADJ knob Refer to figure 16
d.	Set the ADJ-MEAS switch to MEAS.		
5.	Energize the MTR through operate in the beacon mode.		
a.	Rotate the HV SUPPLY knob to START and depress the HV SUPPLY ON switch		
b.	On the missile error voltage monitor, set the BEACON TARGET switch to BEACON		
c.	Adjust the HV SUPPLY knob to obtain an indication of 10 ma on the MAGNETRON meter		
	<i>Note</i> Omit d below if the OFF FREQ indicator is not illuminated		
d.	Set the TUNE SLEW switch to SLEW and operate the FREQUENCY switch to set the magnetron to the frequency of the tuned cavity in use (as indicated on the SLEW scale of the FREQUENCY meter).		
e.	Set the TUNE-SLEW switch to TUNE		
f.	Operate the FREQUENCY switch until the pointer on the FREQUENCY meter indicates a null (dip) in the white segment of the TUNE scale		
	The OFF FREQ indicator light extinguishes.		Perform the procedures in table 5-16
6.	Check the reverse current diode		
a.	With a multimeter set on the 100 milliampere scale, monitor the current between TP1 and TP2 in the missile track receiver-transmitter	The meter indicates a value greater than 0 but less than 40 milliamperes.	Refer to figure 16
b.	Disconnect the multimeter		

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(U, Table 3.9 Weekly Transmitter Checks—MTR—Continued)

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Step	Operation	Normal indication	Corrective procedure										
7	Check the transmitted power in the beacon mode												
	a. Observe the indication on the power monitor test meter												
	Note: The power monitor test meter indication is in terms of db down from 5:5 with 5:5 dpm as full scale												
	The indication on the meter is between 0 and 2 db.												
	Adjust the SCALE-db switch to bring the indication as near 0 (full scale) as possible. Repeat the procedures in steps 3, 4, 5, and 7 above												
8	b. Add the indication on the power monitor test meter to the indication of the SCALE db switch. Record this as the final db value												
	The final db value is less than the value indicated below for the frequency corresponding to the cavity in use.												
	Cavity no												
	<table><tr><td>1</td><td>3.5 db</td></tr><tr><td>2</td><td>3.0 db</td></tr><tr><td>3</td><td>2.5 db</td></tr><tr><td>4</td><td>3.0 db</td></tr><tr><td>5</td><td>3.5 db</td></tr></table>			1	3.5 db	2	3.0 db	3	2.5 db	4	3.0 db	5	3.5 db
	1	3.5 db											
2	3.0 db												
3	2.5 db												
4	3.0 db												
5	3.5 db												
Perform the procedures in tables 5-13 and 5-14													
9	c. Set the ADJ. MEAS switch to V												
	Check the 2-volt power supply.												
	a. Depress the PUSH TO READ 2 VOLTS switch on the missile transfer control indicator												
	The MAGNETRON CURRENT meter indicates a value between 1.7 and 2.3 on the top scale.												
	Refer to figure 16												
9	b. Set the BLOWER switch to ON and the ANTENNA switch to NORMAL.												
	Deenergize the MTR transmitter												
	Rotate the HV SUPPLY knob to START and depress the HV SUPPLY OFF switch												

(U, Table 3.9.1 Weekly Target AFC Checks—MTR)

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Step	Operation	Normal indication	Corrective procedure
Perform the procedures in table 2-14			

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(U) Table 3-9.2 Weekly Beacon AFC Checks-MTR

**UNCLASSIFIED**

Step	Operation	Normal indication	Corrective procedure
	Perform the procedures in table 2-15		

(U) Table 3-9.3 Weekly Range System Checks-MTR

**UNCLASSIFIED**

Step	Operation	Normal indication	Corrective procedure
	Perform the procedures in table 2-16		

(U) Table 3-9.4 Weekly Monopulse Receiver Checks-MTR

**UNCLASSIFIED**

Step	Operation	Normal indication	Corrective procedure
	Perform the procedures in table 2-17.		

(U) Table 3-9.5 Weekly ATC Checks-MTR

**UNCLASSIFIED**

Step	Operation	Normal indication	Corrective procedure
	Perform the procedures in table 2-18		

(U) Table 3-10. (Deleted)

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3-22 1/(3-22 2 blank)

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## 11. Table 3-11 Weekly Tracking Servo Checks- MTR CONFIDENTIAL

Step	Operation	Normal indication	Corrective procedure
1.	<b>Prepare for the tracking servo checks.</b>		
	a. Perform the procedures in table 2-1. <sup>1</sup>		
	b. On the missile track control drawer, set the switches as indicated		
	Switch	Setting	
	TEST	TEST	
	DISABLE	down	
	c. On the missile error voltage monitor set the switches as indicated		
	Switch	Setting	
	(F TEST)—ADJ	ADJ	
	RCVR TEST	BIAS	
2.	<b>Check the high power servo amplifier (HPSA) balance from the radar control trailer.</b>		
	a. In the missile track control drawer, connect a test lead between jacks J1 and J2.		
	The elevation position displays are not changing.		Perform the procedures in table 4-7
	b. Remove the test lead from J1 and J2 and connect it between J3 and J4		
	The azimuth position displays are not changing.		Perform the procedures in table 4-7
	c. Remove the test lead from J3 and J4		
3.	<b>Check the dc balance of the servo error converters</b>		
	a. On the missile track control-power supply, set the AGC-MANUAL switch to MANUAL. Adjust the GAIN control fully counterclockwise		
	b. On the missile error voltage monitor operate and hold the AZ SENS and EL SENS switches in the HI position		
	The AZ ANGLE ERROR and EL ANGLE ERROR meters indicate within 1/2 of a small division of zero.		On the missile azimuth or elevation servo error converter, adjust the SP BAL control to obtain an indication of zero on the meter
	c. Release the AZ SENS and EL SENS switches		
4.	<b>Check the balance of the azimuth angle error modulator.</b>		
	a. Set the MTR range to approximately 20,000 yards.		
	04. SET THE MTR RANGE COORD SELECT SWITCH TO A-TCW.		

\* Omit this step if the checks in the preceding tables have been performed in sequence

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(U) Table 3 11, Weekly Tracking Servo Checks-MTR-Continued

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Step	Operation	Normal indication	Corrective procedure																
4.	Continued																		
	b	On the missile track control drawer, set the azimuth MAN-AID-AUTO switch to AUTO.	<p>The azimuth indication is steady. The two right-hand LED's should be ignored.</p> <p>On the missile azimuth angle error modulator, slowly adjust the MOD BAL control</p> <p>Refer to figure 18.</p>																
	c.	Set the azimuth MAN-AID-AUTO switch to MAN.																	
5.	Check the balance of the elevation angle error modulator																		
	a	Position the MTR antenna elevation to approximately 800 mils.																	
	b.	On the missile track control drawer, set the elevation MAN-AID-AUTO switch to AUTO.	<p>The elevation indication is steady. The two right-hand LED's should be ignored.</p> <p>On the missile elevation angle error modulator, slowly adjust the MOD BAL control.</p> <p>Refer to figure 19.</p>																
	c	Set the elevation MAN-AID-AUTO switch to MAN																	
	d	Set the AGC-MANUAL switch to AGC.																	
6.	Check the MTR automatic range tracking.																		
	a.	On the MTR IF test generator, set the switches as indicated	<table><thead><tr><th>Switch</th><th>Setting</th></tr></thead><tbody><tr><td>OSC</td><td>ON</td></tr><tr><td>MODE</td><td>CW</td></tr><tr><td>SLEW</td><td>Center (off)</td></tr><tr><td>SLEW RATE</td><td>50</td></tr><tr><td>0-90 dB ATTENUATOR</td><td>30</td></tr><tr><td>0-9 dB ATTENUATOR</td><td>0</td></tr><tr><td>PULSE WIDTH</td><td>SHORT</td></tr></tbody></table>	Switch	Setting	OSC	ON	MODE	CW	SLEW	Center (off)	SLEW RATE	50	0-90 dB ATTENUATOR	30	0-9 dB ATTENUATOR	0	PULSE WIDTH	SHORT
Switch	Setting																		
OSC	ON																		
MODE	CW																		
SLEW	Center (off)																		
SLEW RATE	50																		
0-90 dB ATTENUATOR	30																		
0-9 dB ATTENUATOR	0																		
PULSE WIDTH	SHORT																		
	b	On the IF test generator, adjust the FINE and COARSE IF FREQ ADJ controls for a maximum indication on the missile error voltage monitor RCVR TEST meter																	
	c	On the MTR IF test generator, set the MODE switch to PULSE and momentarily depress the RANGE PRE-SET switch																	
	d.	Set the MTR range to approximately 18,000 yards																	

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## (L) Table 3-11 Weekly Tracking Servo Checks—MTR—Continued

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Step	Operation	Normal indication	Corrective procedure
6.	Continued		
e	On the missile track control drawer set the DISABLE switch to DISABLE and the range MAN—AID—AUTO switch to AID		
	The IF test pulse is centered in the range notch.		Set the DISABLE switch to the down position. Change the MTR range to place the pulse in the range notch. Set the DISABLE switch to DISABLE
			Refer to figures 20, 21.4, and 34
f	On the MTR IF test generator, set the SLEW switch to OUT and the SLEW RATE switch to 500		
g	When the IF test pulse is acquired, set the SLEW RATE switch to 2500		
	Note To help acquire the IF test pulse, it may be necessary to rotate the range handwheel to set on a dead rail.		
h	When the IF test pulse is acquired, set the range MAN AID—AUTO switch to AUTO.		
	The IF test pulse remains within the range notch.		Refer to figure 20
i	When the IF test pulse range equals approximately 100,000 yards, set the IF test generator SLEW RATE switch to OFF and set the range MAN AID—AUTO switch to MAN and then to AID.		
	The IF test pulse is within the range notch.		Adjust the range handwheel to reacquire the IF test pulse
j	Set the SLEW RATE switch to 50 and the SLEW switch to IN		
k	Set the SLEW RATE switch to 500.		
l	When the IF test pulse is acquired, set the SLEW RATE switch to 2500		
	Note To help acquire the IF test pulse, it may be necessary to rotate the range handwheel to establish an aided rate		
m	When the IF test pulse is acquired, set the range MAN AID—AUTO switch to AUTO.		
	The IF test pulse remains within the range notch.		Refer to figure 20.
n	Continue the check until the IF test pulse range is approximately 20,000 yards.		
o	Set the MAN AID—AUTO switch to MAN		
p	On the IF test pulse generator, set the switches as indicated.		
	Switch	Setting	
	OSC	OFF	
	SLEW RATE	OFF	
	SLEW	Center (off)	
	0-90 dB ATTENUATOR	90	
7.	Perform the daily tracking servo check procedures in table 2-19.		

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U Table 3.2 Weekly Radar Coder Checks- MTP

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Step	Operation	Normal indication	Corrective procedure
* 1	Perform the daily radar coder check procedures in table 2-20, steps 1, 2, 3, 4f, 5, and 6.		
2.	Prepare the computer for the radar coder checks.		
a	Have the computer operator perform the procedures in a 1 through d below.		
a 1	Energize the computer as prescribed in the daily power checks in TM 9-1430-1251-12-1.		
b.	On the keyboard/display, enter 7 and depress CR.		
c.	Enter COD and depress CR.		
d.	Enter PY1 and depress CR.		
3.	Check the control of the coder command status indicators using the computer.		
a.	(Deleted)		
b	On the coder control panel, set the COMMAND ORIGIN switch to NORMAL. Verify that the BURST ORDER and BURST ENABLE switches are set to NORMAL.		
Note: Inform the computer operator of any abnormal indications that occur while performing the procedures in c below.			
c	The following table lists the indicators which should be illuminated on the coder control panel for computer CODER TEST checks 1 through 10. Have the computer operator sequentially step the computer through the 10 test steps by simultaneously depressing CTL and C.		
TEST no.		PITCH MAX ZERO +MAX -MAX	YAW ZERO +MAX
1		T	T
2		T	T
3		T	
4			T
5		T	T
6		T	T
7			T
8		T	T
9 <sup>1</sup>		T	
10		T	T
d	On the missile track control drawer, set the TEST switch to the down position.		
The YAW column indicators are extinguished.			
Refer to figure 36.			
The PITCH column TYPE and ZERO indicators are illuminated.			
Refer to figure 36.			

<sup>1</sup> Note: special instructions on the computer keyboard/display to obtain test no. 9.**CONFIDENTIAL**

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(U) Table 3.12 Weekly Radar Coder Checks—MTR—Continued

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Step	Operation	Normal indication	Corrective procedure																
3.	Continued	The BURST ENABLE and BURST ORDER indicators are illuminated.	Refer to figure 36																
4.	Check the coder order error operation.																		
	a On the A8 coder board, connect a test lead between TP1 and TP7 (end test points)	The LED on board A8 illuminates.	Refer to figure 36																
		The ORDER ERROR indicator on the coder control panel illuminates.	Refer to figure 36.																
	b Remove the test lead between TP1 and TP7.																		
5.	Reestablish the computer status.																		
	Notify the computer operator that the checks have been completed																		
6.	Deenergize the MTR transmitter.																		
	Rotate the HV SUPPLY knob to START and depress the HV SUPPLY-OFF switch																		
7.	Reestablish the switch positions.																		
	a On the coder control panel, set the switches as indicated																		
		<table><tr><th>Switch</th><th>Setting</th></tr><tr><td>FREKNOCK</td><td>NORMAL</td></tr><tr><td>COMMAND ORIGIN</td><td>NORMAL</td></tr><tr><td>PITCH</td><td>ZERO</td></tr><tr><td>YAW</td><td>ZERO</td></tr><tr><td>BURST ORDER</td><td>NORMAL</td></tr><tr><td>BURST ENABLE</td><td>NORMAL</td></tr><tr><td>BATTERY CODE</td><td>(Assigned code)</td></tr></table>	Switch	Setting	FREKNOCK	NORMAL	COMMAND ORIGIN	NORMAL	PITCH	ZERO	YAW	ZERO	BURST ORDER	NORMAL	BURST ENABLE	NORMAL	BATTERY CODE	(Assigned code)	
Switch	Setting																		
FREKNOCK	NORMAL																		
COMMAND ORIGIN	NORMAL																		
PITCH	ZERO																		
YAW	ZERO																		
BURST ORDER	NORMAL																		
BURST ENABLE	NORMAL																		
BATTERY CODE	(Assigned code)																		
	b On the missile track control power supply, set the AGC-MANUAL switch to AGC																		
	c On the missile error voltage monitor, set the PRESET switch to 1.																		
	d On the missile track control drawer, set the TEST switch to TEST																		

(U) Table 3.13 Weekly Acquire and Command Checks—MTR

**UNCLASSIFIED**

Step	Operation	Normal indication	Corrective procedure
	<p>Note: MTR acquire and command checks will be performed in blue status and will require the coordination of the battery control and launching control areas. Communications should be established before the following steps are performed.</p>		

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(U) Table 3-13 Weekly Acquire and Command Checks—MTR—Continued

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Step	Operation	Normal indication	Corrective procedure
1	Perform the daily acquire and command checks.		
	Perform the procedures in table 2-21, steps 1 through 6		
2.	Record the RECEIVED SIGNAL meter indications.		
a	With only receiver noise present in the range notch, record the average indication on the RECEIVED SIGNAL meter		
b	On the missile track control drawer, set the TEST switch to the down position		
	The flight simulator is reacquired.		
	Repeat step 1 above		
c	For use in table 3-13-1, note and record the indication on the RECEIVED SIGNAL meter		
d	In the missile control indicator group, depress and hold the PRE ATT switch on the missile track slew control amplifier. For use in table 3-13-1, note and record the indication on the RECEIVED SIGNAL meter		
	The indication on the RECEIVED SIGNAL meter is approximately two numbers less than that observed in c above.		
	Refer to figure 17		
e	Release the PRE ATT switch		
3	(Deleted)		
4.	Prepare for the missile acquire and command checks.		
	Notify the launching control area that the MTR is ready for the acquire and command checks.		
5	Acquire the designated missile.		
	After notification from the launching area section under test, set the MISSILE READY switch on the missile track indicator to the up position and depress the SECTION A, B, C, or D and LAUNCHER 1, 2, 3, or 4 pushbuttons corresponding to the selected missile		LOCAL ORIGINATOR AND THE

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*IL, Table 3-13 Weekly Acquire and Command Checks-MTR-Cont used***UNCLASSIFIED**

Step	Operation	Normal indication	Corrective procedure
5.	Continued		
	b On the missile track control drawer, set the TEST and DISABLE switches to the down position		
		The missile track antenna slews to the coordinates of the designated missile.	Perform the launcher position adjustments in accordance with TM 9-1430-1251 10
		The green TRACK indicator light on the missile control-indicator group illuminates within 3 seconds.	Complete the requirements in b above. If the problem is not resolved, perform the procedures in table 3-13.1.
		The signal from the missile appears in the range notch.	(1) Acquire another missile. If the problem is solved, reject the first missile and notify launching area maintenance personnel. (2) Perform the procedures in table 2-15.
		The AZIMUTH ERROR and ELEVATION ERROR meters on the missile track indicator indicate 0.	Refer to figure 18 (azimuth) or 19 (elevation)
		The COAST indicator light on the missile track control drawer extinguishes.	Refer to figure 34
		For missiles with serial number 11935 and below, the RECEIVED SIGNAL meter indication is at least 6.0.	
		For missiles with serial number 13001 and above, the RECEIVED SIGNAL meter indication is at least 6.5.	Perform the procedures in table 2-17. If a problem still exists, reject the missile and notify launching area maintenance personnel.

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(U) Table 3-13 Weekly Acquire and Command Checks—MTR—Cont used

**UNCLASSIFIED**

Step	Operation	Normal indication	Corrective procedure
5.	Continued		
	The RECEIVED SIGNAL meter indication minus the indication recorded in step 2a above is within 0.5 of the previous check of the same missile		
	<ol style="list-style-type: none"> <li>(1) Perform the procedures in table 2-17</li> <li>(2) If the indication is still abnormal, notify launching area maintenance personnel</li> </ol>		
	Only one pulse is visible in the range notch.		
	<p>If severe video flaming is observed, notify the launching area maintenance personnel to install an RF radiation absorber on one transmitting antenna on the missile. If two returns from a missile are visible, perform the procedures in (1) through (8) below</p> <ol style="list-style-type: none"> <li>(1) On the missile track control drawer, set the TEST switch to TEST</li> <li>(2) On the coder control panel, set the COMMAND ORIGIN switch to SIMULATED, the PITCH switch to ZERO, and the YAW switch to ZERO</li> <li>(3) Set the BURST ENABLE switch to NORMAL and the BURST ORDER switch to NORMAL</li> <li>(4) Set the SELECT switch to PITCH. One of the pulses will disappear.</li> <li>(5) Rotate the range handwheel to center the remaining pulse in the range notch. Record the range indication.</li> <li>(6) Set the SELECT switch to YAW.</li> <li>(7) Repeat (5) above</li> <li>(8) Subtract the indication obtained in (5) above from the indication obtained in (7) above. If the difference is less than 15 yards, the missile is acceptable. If the difference is greater than 15 yards, reject the missile and notify the launching area maintenance personnel</li> </ol>		

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4. Table 3-13 Weekly Acquire and Command Checks- MTR Continued

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Step	Operation	Normal indication	Corrective procedure
5.	Continued		
c	On the missile error voltage monitor, operate and hold the AFC SENS switch to the HI position	The RCVR TEST meter indicates between 45 and 55.	Perform the procedures in table 2-15.
d	Release the AFC SENS switch		
e	Note and record the indication on the RECEIVED SIGNAL meter for the specific missile under test. This indication is used in table 3-13.1, step 2a.		
f	In the missile control indicator group, momentarily depress the PRE ATT switch on the missile track saw control amplifier. Note and record the indication on the RECEIVED SIGNAL meter for the specific missile under test. This indication is used in table 3-13.1, step 3b.		
6.	Perform the missile command checks.		
	<i>Note:</i> All controls in this step are on the control panel in the MTR coder unless otherwise specified.		
a	On the missile track control drawer, set the TEST switch to TEST	The green TRACK indicator light extinguishes.	Refer to figure 45 in TM 9-1430-1254-20/2
b	Set the COMMAND ORIGIN switch to SIMULATED and the SELECT switch to BOTH		
c	Set the PITCH switch to ZERO and the YAW switch to +MAX and then to -MAX	The fins on the missile respond to the switch position orders.	(1) Perform the procedures in table 2-20. Repeat a, b, and c above. (2) If the indication is still abnormal, notify the launching area maintenance personnel.
d	Set the YAW switch to ZERO and the PITCH switch to +MAX and then to -MAX.	The fins on the missile respond to the switch position orders.	(1) Perform the procedures in table 2-20. Repeat a through d above. (2) If the indication is still abnormal, notify the launching area maintenance personnel.
e	Set the PITCH switch to ZERO		

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(U) Table 3-13. Weekly Acquire and Command Checks-MTR -Continued

**UNCLASSIFIED**

Step	Operation	Normal indication	Corrective procedure
6.	<b>Continued</b>		
	<i>f</i> At the request of launching area personnel, set the BURST ENABLE and BURST ORDER switches to TEST		
	The indication on the MAGNETRON meter increases or remains constant.		
	The missile signal disappears from the range indicator.		
	(1) Perform the procedures in table 2-20. Repeat <i>a</i> through <i>f</i> above.		
	(2) If the missile signal does not disappear, notify the launching area maintenance personnel		
	<i>g</i> At the request of launching area personnel, report BEACON LOST		
	<i>h</i> Set the BURST ENABLE and BURST ORDER switches to NORMAL		
	<i>i</i> Set the COMMAND ORIGIN switch to NORMAL		
	<i>j</i> At the request of launching area personnel, report BEACON RECEIVED		
	<i>k</i> On the missile track control drawer, set the DISABLE switch to DISABLE		
	<i>l</i> If necessary, repeat the procedures in steps 4, 5, 6 above for all missiles.		
7.	<b>Return the system to normal operation.</b>		
	<i>a</i> Rotate the HV SUPPLY knob to START and depress the HV SUPPLY OFF switch		
	<i>b</i> On the missile track indicator set the LOCAL DESIGNATE and MISSILE READY switches to the down positions		
	<i>c</i> Notify the launching control console operator that the checks have been completed.		
	<i>d</i> Notify the computer operator that the checks have been completed		

(U) Table 3-13.1 Weekly AGC Monitor Checks-MTR

**UNCLASSIFIED**

Step	Operation	Normal indication	Corrective procedure
1.	<b>Prepare for the AGC monitor check.</b>		
	<i>a</i> On the missile track control drawer, set the TEST switch to TEST and the DISABLE switch to DISABLE		
	<i>b</i> On the missile track control power supply, set the AGC-MANUAL switch to MANUAL and adjust the receiver GAIN control fully clockwise		

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(U) Table 3 13.1 Weekly AGC Monitor Checks-MTR-Continued

## UNCLASSIFIED

Step	Operation	Normal indication	Corrective procedure
2.	Check the level 1 operation.		
a	Obtain the RECEIVED SIGNAL meter indications noted in table 3 13, steps 2c and 5e. If the signal is received from a missile, select the meter indication that corresponds to the lowest operational missile signal.		
b	While observing the DS1 indicator on the AGC monitor amplifier, slowly adjust the receiver GAIN control counterclockwise until the indicator just illuminates.		
	The RECEIVED SIGNAL meter indicates 0.25 to 0.75 less than the meter indication selected in <i>a</i> above.		Adjust the receiver GAIN control to obtain a meter indication 0.5 less than that selected in <i>a</i> above. On the AGC monitor amplifier, adjust variable resistor R4 clockwise until DS1 is not illuminated, then slowly counterclockwise until DS1 just illuminates.
			Refer to figure 17.
3.	Check the level 2 operation.		
a	Adjust the receiver GAIN control fully clockwise.		
b	Determine and record the RECEIVED SIGNAL meter indication noted in table 3 13, step 2d or 5f, which corresponds with the number selected in step 2a above.		
c	On the missile track slew control amplifier, depress and hold the PRE ATT switch.		
d	While observing the DS1 indicator on the AGC monitor amplifier, slowly adjust the receiver GAIN control counterclockwise until the indicator just illuminates.		
	The RECEIVED SIGNAL meter indicates 0.25 to 0.75 less than the value recorded in <i>b</i> above.		Adjust the receiver GAIN control to obtain a meter indication 0.5 less than that noted in <i>b</i> above. On the AGC monitor amplifier, adjust variable resistor R3 clockwise until DS1 is not illuminated, then slowly counterclockwise until DS1 just illuminates.
			Refer to figure 17.
e	Release the PRE ATT switch.		
4.	Reestablish the switch positions.		
	Set the AGC-MANUAL switch to AGC and the DISABLE switch to the down position.		

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c, Table 3-14 Weekly Transmitter Checks TRK

**UNCLASSIFIED**

Step	Operation	Normal indication	Corrective procedure
1.	(Deleted)		
2.	Perform the daily TRR transmitter checks. Perform the procedures in table 2-22, steps 1, 2, and 3		
3.	Check the voltages at the antenna.		
a	At the range antenna support base, set the METER switch to the positions indicated below and observe that meter indications are as specified		
	(1) TRANS B-MAG CLR	Within green block	Refer to figure 83.
	(2) TRANS B-MOD CLR	Within green block $\pm 1/4$ inch	Refer to figure 83
	(3) TRANS B-MOD HV	Within green block $\pm 1/4$ inch	Refer to figure 83
	(4) +350V	Within green block	Refer to figure 83
	(5) +320V	Within green block	Refer to figure 83
	(6) -320V	Within green block	Refer to figure 83
	(7) +150V	Within green block	Refer to figure 83
	(8) 250V	Within green block	Refer to figure 83
	(9) +250V	Within green block	Refer to figure 83.
	(10) TRANS A-MOD HV	Within green block $\pm 1/4$ inch	Refer to figure 83
	(11) TRANS A-MOD CLR	Within green block $\pm 1/4$ inch	Refer to figure 83
	(12) TRANS A-MAG CUR	Within green block	Refer to figure 83.
	(13) METER OFF		
b	On the range antenna support base, set the ANTENNA switch to DISABLE and the BLOWER switch to OFF		
c	On the meter control indicator in the range receiver transmitter, set the TEST METER switch to the positions indicated below and observe that meter indications are as specified		
	(1) TRANS B-MAG CUR	Within green block	Refer to figure 83
	(2) TRANS B-MOD CLR	Within green block $\pm 1/4$ inch	Refer to figure 83
	(3) TRANS B-MOD HV	Within green block $\pm 1/4$ inch	Refer to figure 83
	(4) +320V	Within green block	Refer to figure 83.
	(5) +150V	Within green block	Refer to figure 83.
	(6) -250V	Within green block	Refer to figure 83.
	(7) +250V	Within green block	Refer to figure 83
	(8) TRANS A-MOD HV	Within green block $\pm 1/4$ inch	Refer to figure 83
	(9) TRANS A-MOD CUR	Within green block $\pm 1/4$ inch	Refer to figure 83
	(10) TRANS A-MAG CUR	Within green block	Refer to figure 83
	(11) METER OFF		

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U. Table 3-14 Weekly Transmitter Checks- TRR- Continued

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Step	Operation	Normal indication	Corrective procedure
3.	Continued		
	d On the countermeasures control indicator rotate the MOD A HV and MOD B HV knobs fully counterclockwise		
	e Depress the MAG A -HV OFF and MAG B -HV OFF switches.		
4.	Check the frequency indicators for magnetron A.		
	a On the meter control indicator in the range RF control power supply group, set the TUNING TRANSMITTER switch to A FAST and the AUTO -MAN PAN NO LOSS switch to MAN		
	b Operate and hold the FREQ switch on the meter control indicator to the INCR position until the magnetron tuning dial on magnetron A stops.		
	The magnetron tuning dial indicates a value corresponding to the F5 dial setting as stamped on the magnetron.		
			(1) Disconnect the tuning drive flexible shaft from the right-angle drive end of the tuning drive
			(2) Manually tune magnetron A to the F5 dial setting
			(3) Connect the tuning drive flexible shaft to the tuning drive. If necessary, rotate the shaft slightly to engage the spline
	The magnetron frequency meter on the range RF control-power supply group indicates 5.		
			Adjust FREQ MTR TRIM MAG A variable resistor R14
			Refer to figure 88.
	c Operate and hold the FREQ switch to the DCR position until the magnetron tuning drive on magnetron A stops		
	The magnetron tuning dial indicates within 0.05 dial units of the F1.4 setting stamped on the magnetron.		
			(1) On the tuning drive, loosen the locknut on switch S4
			(2) Operate the FREQ switch to INCR to move magnetron A from the stops.
			(3) Make a slight adjustment to switch S4
			(4) Repeat c above.
			(5) Tighten the locknut using care not to change the switch setting.



11 Table 3 14 Weekly Transmitter Checks TRR Continued

Step	Procedure	Normal indication	Test	Go to
4.	Continued			
		The magnetron frequency meter indicates 1.4.		
			Adjust FREQ MTR TRIM MAG A variable resistor R12, and repeat b and c above to eliminate interaction	
			Refer to figure 88	
	d Set the TUNING TRANSMITTER switch to A SLOW			
	e. Operate the FREQ switch	Magnetron A can be tuned.		
			Refer to figure 88	
	f Set the TUNING TRANSMITTER switch to A FAST and operate the FREQ switch to obtain a midscale indication on the FREQUENCY meter			
5.	Check the frequency indicators for magnetron B.			
	a Set the TUNING TRANSMITTER switch to B FAST			
	b Operate and hold the FREQ switch on the meter control indicator to the INCR position until the magnetron tuning dial on magnetron B stops			
		The magnetron tuning dial indicates a value corresponding to the F5 dial setting as stamped on the magnetron.		
			(1) Disconnect the tuning drive flexible shaft from the right-angle drive end of the tuning drive	
			(2) Manually tune magnetron B to the F5 dial setting	
			(3) Connect the tuning drive flexible shaft to the tuning drive. If necessary, rotate the shaft slightly to engage the spline	
		The magnetron frequency meter on the range RF control-power supply group indicates 5.		
			Adjust FREQ MTR TRIM MAG B variable resistor R7.	
			Refer to figure 88.	
	c Operate and hold the FREQ switch to the DCR position until the magnetron tuning dial on magnetron B stops.			
		The magnetron tuning dial indicates within 0.05 dial units of the F1.4 setting stamped on the magnetron.		
			(1) On the tuning drive, loosen the locknut on switch S3.	

(U) Table 3-14 Weekly Transmitter Checks TRR - Cont. need

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Step	Operation	Normal indication	Corrective procedure
5.	Continued		<p>(2) Operate the FREQ switch to INCR to move magnetron B from the stop.</p> <p>(3) Make a slight adjustment to switch S3</p> <p>(4) Repeat c above</p> <p>(5) Tighten the locknut using care not to change the switch setting.</p> <p>The magnetron frequency meter indicates 1.4.</p> <p>Adjust FREQ MTR TRIM MAG B variable resistor R6, and repeat b and c above to eliminate interaction</p> <p>Refer to figure 88</p> <p>d Set the TUNING TRANSMITTER switch to B SLOW</p> <p>e. Operate the FREQ switch</p> <p>Magnetron B can be tuned.</p> <p>Refer to figure 88</p> <p>f Set the TUNING TRANSMITTER switch to B FAST and operate the FREQ switch to obtain a midscale indication on the FREQUENCY meter</p> <p>g Set the TUNING TRANSMITTER switch to REMOTE.</p>
6.	Calibrate the RF power test set.		<p>a. On the RF power test set in the range RF control power supply group, set the SCALE db switch to 0.</p> <p>b. Set the ADJ—MEAS switch to V</p> <p>The test set meter indicates V (full scale).</p> <p>Adjust the V ADJ knob on the test set</p> <p>Refer to figure 73.</p> <p>c. Set the ADJ—MEAS switch to <math>\infty</math></p> <p>The test set meter indicates <math>\infty</math>.</p> <p>Adjust the <math>\infty</math> ADJ knob for a meter indication as close to <math>\infty</math> as possible</p> <p>Refer to figure 73.</p> <p>d Set the ADJ—MEAS switch to 0</p> <p>The test set meter indicates 0 (full scale).</p> <p>Adjust the 0 ADJ knob</p> <p>Refer to figure 73</p>

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(U) Table 3-14 Weekly Transmitter Checks TRR Continued

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Step	Operation	Normal indicator	Remarks
6.	<b>Continued</b>		
	e. Set the ADJ—MEAS switch to MEAS.		
7	<b>Check the metering circuits.</b>		
	a. Have the director station operator select the LOPAR mode of operation		
	b. Verify that the MP mode is not selected		
	c. On the meter control indicator in the TRR antenna pedestal, set the PULSE switch to LONG		
	d. On the countermeasures control indicator depress the MAG A—HV ON switch and adjust the MOD A HV knob to obtain an indication in the center of the green block on the MAG A meter		
	e. Depress the MAG B—HV ON switch and adjust the MOD B HV knob to obtain an indication in the center of the green block on the MAG B meter		
	f. On the target antenna control group, depress the MP switch		
		The MP ON indicator light on the pulse generator indicator illuminates.	
		The MAG A and MAG B meter indications remain in the center of the green block.	
			On the meter panel in the range antenna support base, adjust variable resistor MAG A MP ADJ for MAG A, or MAG B MP ADJ for MAG B.
			Refer to figure 83.
	g. Depress the MP switch.		
		The MP ON indicator light extinguishes, and the MP—OFF indicator light illuminates.	
			Refer to figure 65
	h. Have the director station operator select the HIPAR mode of operation		
		The MAG A meter indication is in the center of the green block.	
			On the meter panel in the range antenna support base, adjust the PRF SET variable resistor
		The MAG B meter indication is in the green block.	
			Refer to figure 83
	i. Have the director station operator select the LOPAR mode of operation		
8.	<b>Check the transmitted power in the LOPAR long pulse mode.</b>		
	a. Verify that the ANTENNA switch is set to DISABLE		
	b. On the meter control indicator in the range RF control-power supply group, set the PULSE switch to LONG and the TRANS ON ANT switch to A.		
	c. Set the TUNING TRANSMITTER switch to A SLOW.		

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U, Table 3-14 Weekly Transmitter Checks-THR-Continued

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Step	Operation	Normal indication	Corrective procedure
8.	Continued		
	<p>Note: While performing the procedure and below, adjust the SCALE -db switch as necessary to maintain an indication of less than 3 db on the test meter. An indication beyond 0 db on the right is permissible. The meter indication is in terms of db down from 48 dbm as a full-scale indication.</p>		
d	Operate the FREQ switch on the meter control indicator to tune the magnetron through the entire band. At the low, middle, and high positions on the band, determine the RF power by adding the test meter indication to the indication of the SCALE-db switch.	<p>The final computed db indication does not exceed 3 db at the low end of the band, 3.5 db at midband, or 4 db at the high end of the band.</p> <p>Perform the procedures in table 5-13, step 4a. Perform the procedures in table 5-13, steps 2b through 2e.</p> <p>No erratic indications occur on the RF power test set meter.</p> <p>Check for RF arcing.</p> <p>Refer to figure 73.</p>	
e	Set the TRANS ON ANI switch to B, set the TUNING TRANSMITTER switch to B SLOW, and repeat d above.		
9.	Check the transmitted power in the LOPAR short pulse mode.		
a	On the meter control indicator, set the PULSE switch to SHORT, the TRANS ON ANI switch to A, and the TUNING TRANSMITTER switch to A FAST.		
b	Adjust the SCALE -db switch to obtain an on-scale indication as near full scale as possible.		
c	On the meter control indicator, set the AUTO-MAN-PAN NO LOSS switch to PAN NO LOSS and calibrate the RF power test set by performing step 6b through e above. Set the AUTO-MAN-PAN NO LOSS switch to MAN.		
d	Operate the FREQ switch to tune the magnetron to the low, middle, and high positions of the band. At each position, repeat b and c above and add the test meter indication to the indication of the SCALE-db switch.		
*	<p>The <sup>final</sup> computed db indication does not exceed 10 db at the low end of the band, 10.5 db at midband, or 11 db at the high end of the band.</p> <p>Perform the procedures in table 5-13, step 4a. Perform the procedures in table 5-13, steps 2b through 2e, and then repeat step 9 above.</p>		
e	Set the TRANS ON ANI switch to B, set the TUNING TRANSMITTER switch to B FAST, and repeat c and d above.		
f	Set the SCALE -db switch to 0 and the TUNING TRANSMITTER switch to REMOTE.		
g	Set the BLOWER switch to ON and the ANTENNA switch to NORMAL.		

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*(U) Table 3-14 Weekly Transmitter Checks-TRR -Continued***UNCLASSIFIED**

Step	Operation	Normal indication	Corrective procedure
10	Deenergize the TRR transmitters.		
	a Rotate the MOD A HV and MOD B HV knobs fully counterclockwise		
	b Depress the MAG A HV OFF and the MAG B HV OFF switches		
	c On the countermeasures control indicator, set the MAN AUTO switch to AUTO		

*(U) Table 3-14.1 Weekly Target AFC Checks-TRR***UNCLASSIFIED**

Step	Operation	Normal indication	Corrective procedure
	Perform the procedures in table 2-23.		

*(U) Table 3-14.2 Weekly Range System Checks-TRR***UNCLASSIFIED**

Step	Operation	Normal indication	Corrective procedure
	Perform the procedures in table 2-24		

*(U) Table 3-14.3 Weekly Lin-Log Receiver Checks-TRR***UNCLASSIFIED**

Step	Operation	Normal indication	Corrective procedure
	Perform the procedures in table 2-25		

*(U) Table 3-14.4 Weekly Panoramic Receiver Checks-TRR***UNCLASSIFIED**

Step	Operation	Normal indication	Corrective procedure
	Perform the procedures in table 2-26		

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(U) Table 3-15 Weekly Countermeasures Control Indicator Checks—TRR

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Step	Operation	Normal indication	Corrective procedure
1.	Prepare for the countermeasures control-indicator checks.		
	a. Perform the procedures in table 2-1		

<sup>1</sup> Omit this step if the checks in the preceding tables have been performed in sequence**CONFIDENTIAL**

(U) Table 3-15 Weekly Countermeasures Control Indicator Checks-TRR-Continued

## CONFIDENTIAL

Step	Operation	Normal indication	Corrective procedure
1	Continued		
	a. Perform the daily target AFC check procedures in table 2-23		
	b. On the range radar power control-indicator, verify that the TEST-OPERATE switch is set to OPERATE		
	c. On the target track control-power supply, verify that the TRR PULSE WIDTH switch is set to LONG		
	d. On the countermeasures control indicator, verify that the MAN-AUTO switch is set to AUTO		
	<i>Note:</i> All switches, knobs, and meters in steps 2 through 5 below are located on the countermeasures control indicator unless otherwise indicated.		
2.	Energize the A and B transmitters.		
	a. Rotate the MOD A HV knob fully counterclockwise		
	b. Depress the MAG A-HV ON switch		
	c. Adjust the MOD A HV knob to obtain an indication in the center of the MAG A meter green block		
	d. Repeat a through c above, substituting B for A		
3.	Check the panoramic sweep display.		
	a. Observe the upper sweep.		
	The presentation is well focused with a minimum of distortion.		
	Adjust the PAN FOCUS and PAN INTENSITY controls. If required, adjust the ASTIGMATISM control inside the countermeasures control-indicator (left rear).		
	Refer to figure 75.		
	The sweep is approximately 1/2 inch above the center of the countermeasures control-indicator.		
	On the video amplifier, adjust the PAN VERT CENT control.		
	Refer to figure 75.		
	The sweep starts just inside the left edge of the indicator.		
	On the panoramic sweep generator, adjust the HOR CENT variable resistor.		
	Refer to figure 75.		
	The sweep extends just to the right edge of the indicator		
	On the panoramic sweep generator, adjust the IND SWP LG variable resistor		
	Refer to figure 75.		

<sup>1</sup> Omit this step if the checks in the preceding tables have been performed in sequence.

(U) Table 3 15. Weekly Countermeasures Control Indicator Checks-TRR-Continued

## CONFIDENTIAL

Step	Operation	Normal indication	Corrective procedure
4.	Perform the initial adjustment of the panoramic oscillator sweep circuits.		
a	Set the MAG SEL switch to A, and operate the FREQUENCY switch to tune magnetron A to the low frequency stop		
a 1	Set the MAG SEL switch to B, and operate the FREQUENCY switch to tune magnetron B to the high frequency stop		
a 2	On the panoramic sweep generator, observe the waveform on an oscilloscope that is connected to the TIMING test point		
	A nonsymmetrical square wave is observed.		
	Refer to figure 75		
	The negative time duration is within 8.7 and 9.7 milliseconds.		
	On the countermeasures range sweep generator, adjust the PAN TIMING 9 2M SEC variable resistor for a 9.2-millisecond duration		
	Refer to figure 75.		
	The positive time duration is within 2.1 and 2.5 milliseconds.		
	On the countermeasures range sweep generator, adjust the PAN TIMING 2 3M SEC variable resistor for a 2.3-millisecond duration		
	Refer to figure 75		
b.	Disconnect the oscilloscope		
c	On the panoramic sweep generator, verify that the PAN LINEARITY control is set fully clockwise. Set the PAN SWP AMP control approximately 15 degrees counterclockwise from the maximum clockwise position		
d	Establish telephone communications between the TTR console and the TRR antenna.		
e	At the range antenna support base, set the ANTENNA switch to DISABLE and the BLOWER switch to OFF		
f	On the meter control-indicator, set the AUTO-MAN-PAN NO LOSS switch to AUTO		
g	On the panoramic sweep control located in the range RF control power supply group, adjust the HIGH SET control until two pairs of frequency pips are just visible on the countermeasures control-indicator		
h	On the panoramic sweep control, adjust the LOW SET control until the two pairs of frequency pips are equally distant from the ends of the sweep		
i	Adjust the HIGH SET control to place the two pairs of frequency pips 1/8 inch from the ends of the sweep.		
i 1	Set the AUTO-MAN-PAN NO LOSS switch to MAN		



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(U) Table 3 15. Weekly Countermeasures Control-Indicator Checks-TRR Continued

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Step	Operation	Normal indication	Corrective procedure
4.	<b>Continued</b>		
	g. Set the BLOWER switch to ON and the ANTENNA switch to NORMAL.		
5.	<b>Check the adjustments of the panoramic oscillator circuits.</b>		
	a. Set the MAG SEL switch to A, and operate the FREQ switch to tune magnetron A to the high frequency stop.		
	b. Set the MAG SEL switch to B, and operate the FREQ switch to tune magnetron B to the low frequency stop.		
	c. Observe the panoramic sweep.		
	A pair of frequency pips appears within 3, 16 inch of the sweep ends.		
			(1) On the TRR antenna support base, set the ANTENNA switch to DIS ABLE and the BLOWER switch to OFF. Perform the procedures in table 3-14, steps 4, 5, and 9g. Repeat a through c above.
			(2) Repeat the procedures in step 4a through c above.
			Refer to figure 75.
6.	<b>Deenergize the A and B transmitters.</b>		
	a. On the countermeasures control-indicator, rotate the MOD A HV knob fully counter-clockwise and depress the MAG A-HV OFF switch.		
	b. On the countermeasures control-indicator, rotate the MOD B HV knob fully counter-clockwise and depress the MAG B-HV OFF switch.		
7.	<b>Reestablish normal operation.</b>		
	Break down the telephone communications between the TRR antenna and the TTR console.		

(U) Table 3 15 1 Weekly Automatic Channel Selector Checks-TRR

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Step	Operation	Normal indication	Corrective procedure
	Perform the procedures in table 2-28.		

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(U, Table 3-16, Weekly Boreight Checks-TRR)

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Step	Operation	Normal indication	Corrective procedure
1.	Prepare for the collimation checks.		
	a.	Perform the procedures in table 2-1 <sup>1</sup>	
	b.	On the target antenna control group rotate the range handwheel to set the TRR range beyond 40,000 yards.	
2.	Energize transmitter A in the TRR.		
	a.	Perform the procedures in table 2-22, steps 1 and 2	
	b.	On the target track control-power supply, set the TRR PULSE WIDTH switch to LONG	
	<i>Warning.</i> When changing antenna azimuth in the following procedures, elevate the antenna to 1,600 mils.		
3.	Install the antenna test set.		
	a.	On the TRR antenna support base, set the ANTENNA switch to DISABLE.	
	a.1	Connect the antenna test set to the LOCAL ANTENNA CONTROL UNIT connector on the antenna support base.	
	b.	Set the CONTROL switch to ANT.	
	c.	Set the RF TEST SET switch on the range antenna support base to ON	
	<i>Note.</i> If the indications below consistently fall out of the tolerance limits and require frequent adjustments, a malfunction exists and the local support unit should be notified		
	d.	Set the ANTENNA switch to NORMAL.	
4.	Check the azimuth alignment of the radar beam.		
	a.	Using the antenna test set, rotate the target range antenna to the plunged azimuth and elevation coordinates of the radar test set as indicated by maximum deflection on the ANTENNA BEAM POSITION meter	
	The ANTENNA BEAM POSITION meter indicates 100.		
	Adjust the GAIN knob on the antenna test set. If an indication of 100 cannot be obtained, set the GAIN knob to midposition and adjust variable attenuator AT1 in the K <sub>U</sub> band attenuator-detector in the radar test set.		
	Refer to figure 94.		
	b.	Rotate the target range antenna clockwise in azimuth until an indication of 50 is obtained on the ANTENNA BEAM POSITION meter. Record the AZIMUTH DIAL indication as A <sub>1</sub> .	

<sup>1</sup> Omit this step if the checks in the preceding tables have been performed in sequence.**CONFIDENTIAL**

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U, Table 3-16 Weekly Boresight Checks-TRR-Continued

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Step	Operation	Normal indication	Corrective procedure
4.	Continued		
	c	Rotate the target range antenna counterclockwise in azimuth until an indication of 50 is obtained on the ANTENNA BEAM POSITION meter. Record the AZIMUTH DIAL indication as $A_d$ .	
	d	Calculate the center value between $A_1$ and $A_d$ , and record this value as $A_1$ .	
	e	If $A_2$ is greater than 3,200 mils, subtract 3,200 mils. If $A_1$ is less than 3,200 mils, add 3,200 mils. Record the result.	

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rU, Table 3-16. Weekly Boresight Checks—TRR—Continued

## UNCLASSIFIED

Step	Operation	Normal indication	Corrective procedure
4.	Continued		
	f. Position the target range antenna to the normal coordinates of the radar test set group as indicated by maximum deflection on the ANTENNA BEAM POSITION meter		
	The ANTENNA BEAM POSITION meter indicates 100.		
			Adjust the GAIN knob on the antenna test set
			Refer to figure 94
	g. Rotate the target range antenna clockwise in azimuth until an indication of 50 is obtained on the ANTENNA BEAM POSITION meter. Record the AZIMUTH DIAL indication as $A_1$ .		
	h. Rotate the target range antenna counterclockwise in azimuth until an indication of 50 is obtained on the ANTENNA BEAM POSITION meter.		
	i. Record the AZIMUTH DIAL indication as $A_2$ .		
	j. Calculate the center value between $A_1$ and $A_2$ , and record this value as $A_r$ .		
	k. Subtract the value of $A_2$ from the value calculated in e above		
	The difference does not exceed 0.3 mil.		
			(1) Calculate the value of $A_r$ with the formula given below. If $A_1$ is greater than 3,200 mils, subtract 3,200 mils. If $A_1$ is less than 3,200 mils, add 3,200 mils.
			$A_r = \frac{(A_1 \pm 3,200) + A_2}{2}$
			(2) Rotate the target range antenna in azimuth until an AZIMUTH DIAL indication of $A_r$ is obtained.
			(3) While maintaining the antenna position, loosen the securing bolt on each side of the target range receiver-transmitter, and adjust the azimuth adjusting screw until the ANTENNA BEAM POSITION meter indicates a peak deflection.
			(4) Tighten the two securing bolts on the target range receiver-transmitter.

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(U) Table 3-16. Weekly Boresight Checks-TRR-Continued

**UNCLASSIFIED**

Step	Operation	Normal Indication	Abnormal Indication
4	Continued		<p>(5) Return the antenna to the coordinates of the radar test set group as prescribed in a above, and repeat step 4 until the 0.3-mil tolerance is obtained</p>
5.	Check the elevation alignment of the radar beam.		
a.	Using the antenna test set, rotate the target range antenna to the punched coordinates of the radar test set group as indicated by maximum deflection on the ANTENNA BEAM POSITION meter	<p>The ANTENNA BEAM POSITION meter indicates 100</p> <p>Adjust the GAIN knob on the antenna test set.</p> <p>Refer to figure 94.</p>	
b.	Using the antenna test set, slowly increase the elevation angle of the target range antenna until an indication of 50 is obtained on the ANTENNA BEAM POSITION meter. Observe and record the elevation dial indication as $E_1$ .		
c.	Slowly decrease the elevation angle of the target range antenna until an indication of 50 is obtained on the ANTENNA BEAM POSITION meter. Record the elevation dial indication as $E_2$ .		
d.	Calculate the center value between $E_1$ and $E_2$ , and record this value as $E_3$ .		
e.	Subtract $E_3$ from 3,200 mils, and record this value.		
f.	Position the target range antenna to the normal coordinates of the radar test set group as indicated by maximum deflection on the ANTENNA BEAM POSITION meter	<p>The ANTENNA BEAM POSITION meter indicates 100.</p> <p>Adjust the GAIN knob on the antenna test set.</p>	
g.	Slowly increase the elevation angle of the target range antenna until an indication of 50 is obtained on the ANTENNA BEAM POSITION meter. Record the elevation dial indication as $E_4$ .		
h.	Slowly decrease the elevation angle of the target range antenna until an indication of 50 is obtained on the ANTENNA BEAM POSITION meter. Record the elevation dial indication as $E_5$ .		
i.	Calculate the center value between $E_4$ and $E_5$ , and record the value as $E_6$ .		
j.	Subtract the value of $E_6$ from the value of $E_3$ , calculated in e above	<p>The difference does not exceed 0.3 mil</p>	<p>(1) Perform the procedures in f above</p> <p>(2) Calculate the value of <math>E_r</math> with the formula given below</p> $E_r = \frac{(3,200 - E_1) + E_2}{2}$

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(U) Table 3-16 Weekly Bore-sight Checks- TRR -Continued

## UNCLASSIFIED

Step	Operation	Normal indication	Corrective procedure
5.	Continued		<p>(3) While still positioned to the coordinates of the radar test set group, remove the UNLOCK--LOCK plug from the elevation correction transmitter, and insert the socket-head screw key to unlock the input gear.</p> <p><b>Caution:</b> When locking or unlocking the input gear, rotate the socket-head screw key until the positive stop is engaged. Do not use a torque wrench.</p> <p>(4) Turn the screw key approximately nine turns counterclockwise to the positive stop position.</p> <p>(5) Remove the cap and rotate the elevation adjustment knob until the elevation dial indicates E'.</p> <p><b>Caution:</b> When locking the input gear, do not stop at the point of maximum torque reaction which occurs at four or five turns clockwise from the extreme counterclockwise (unlocked) position. Operation under this condition results in damage to the elevation correction transmitter.</p> <p>(6) Starting from the extreme counterclockwise (unlocked) position, turn the socket-head screw key clockwise approximately nine turns to the positive stop.</p> <p>(7) Repeat step 5 until the 0.3-mil tolerance is obtained.</p>
6.	Deenergize the TRR transmitter.		
	a. Rotate the MOD A HV knob fully counterclockwise		
	b. Depress the MAG A HV OFF switch		

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(U) Table 3 16, Weekly Boresight Checks-TRR-Continued

**UNCLASSIFIED**

Step	Operation	Normal indication	Corrective procedure
7.	Return the system to normal operation		
	a	Set the RF TEST SET switch to OFF	
	b	On the antenna support base, set the ANTENNA switch to DISABLE	
	c	Remove the antenna test set and return it to storage. <sup>2</sup>	
	d	Set the ANTENNA switch to NORMAL.	

<sup>2</sup> Omit this step if the checks in the succeeding tables are to be performed in sequence

(U) Table 3 17 Weekly Telescope Collimation Checks-TRR

**UNCLASSIFIED**

Step	Operation	Normal indication	Corrective procedure
1.	Perform the weekly boresight checks. <sup>1</sup> Perform the procedures in table 3-16		
2.	Prepare for the telescope collimation checks.		
	a	On the antenna support base, set the ANTENNA switch to DISABLE	
	b	Connect the antenna test set to the LOCAL ANTENNA CONTROL UNIT connector on the TRR antenna support base. <sup>1</sup>	
	c	Install the sighting telescope in the normal position in the telescope mount	
	d	Set the ANTENNA switch to NORMAL.	
3.	Check the telescope collimation in azimuth (perpendicularity)		
	a	Using the antenna test set controls, adjust the target range antenna so that a distant target is centered on the vertical reticle of the sighting telescope	
	b	Note and record the indication on the azimuth correction transmitter	
	c	Reverse the sighting telescope in the telescope mount.	
	d	Plunge the antenna in elevation and adjust elevation and azimuth as necessary until the target observed in a above is centered on the vertical reticle of the sighting telescope.	
	e	Note and record the indication on the azimuth correction transmitter	
	The indications in b and e above are within 0.1 mil.		
	(1) Add the indication in b above to the indication in e above and divide by 2.		
	(2) Move the antenna in azimuth until the azimuth correction transmitter indicates the value calculated in (1) above.		

<sup>1</sup> Omit this step if the checks in the preceding tables have been performed in sequence**CONFIDENTIAL**

(U) Table 3-17 Weekly Telescope Collimation Checks-TRR-Continued

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Step	Operation	Normal Indication	Corrective Procedure
3.	Continued		<p>(3) Adjust the azimuth adjusting screw on the telescope mount until the target is centered on the vertical reticle of the telescope.</p> <p>(4) Repeat steps 2b through 3e above</p>
4.	Check the telescope collimation in elevation.		<p>a Using the antenna test set controls, adjust the target range antenna so that a distant target is centered on the horizontal reticle of the sighting telescope</p> <p>b Note and record the indication on the elevation correction transmitter</p> <p>c Plunge and rotate the antenna until the target in a above is centered on the horizontal reticle of the sighting telescope</p> <p>d Note and record the indication on the elevation correction transmitter</p> <p>e Algebraically subtract the value recorded in b above from 3,200</p> <p>The value calculated is within 0.1 mil of the value obtained in d above.</p> <p>(1) Algebraically subtract the value recorded in d above from 3,200, algebraically add the result to the value recorded in b above, and divide by 2. Algebraically subtract this result from 3,200</p> <p>(2) Position the antenna to the value calculated in (1) above.</p> <p>(3) Loosen the three sighting telescope mount elevation locking bolts and the locking nuts on the sighting telescope adjusting screw</p> <p>(4) Adjust the elevation adjusting screw until the target is centered on the horizontal reticle of the sighting telescope.</p> <p>(5) Tighten the elevation locking bolts and the adjusting screw locking nuts.</p>
5.	Return the TRR to normal operation.		<p>a. Return the antenna to zero elevation.</p> <p>b. On the antenna support base, set the ANTENNA switch to DISABLE.</p> <p>c. Disconnect and store the antenna test set, and return the telescope to storage</p> <p>d. Set the ANTENNA switch to NORMAL.</p>



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(U) Table 3-18. Weekly Remote Switching Checks—TTR and TRR

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Step	Operation	Normal indication	Corrective procedure								
1.	Prepare for the remote switching checks.										
	a.	Set the TTR range to approximately 20,000 yards.									
	b.	On the target antenna control group, set the TEST switch to the down position.									
	c.	On the range radar power control indicator, verify that the TEST-OPERATE switch is set to OPERATE.									
	d.	On the target track control power supply, set the switches as indicated.									
		<table border="0"> <thead> <tr> <th>Switch</th><th>Setting</th></tr> </thead> <tbody> <tr> <td>IND</td><td>A</td></tr> <tr> <td>TTR PULSE WIDTH</td><td>LONG</td></tr> <tr> <td>TRR PULSE WIDTH</td><td>LONG</td></tr> </tbody> </table>	Switch	Setting	IND	A	TTR PULSE WIDTH	LONG	TRR PULSE WIDTH	LONG	
Switch	Setting										
IND	A										
TTR PULSE WIDTH	LONG										
TRR PULSE WIDTH	LONG										
2.	Energize the TTR transmitter.										
	a.	On the target track control power supply, rotate the HV SUPPLY knob to START and depress the HV SUPPLY-ON switch.									
	b.	Adjust the HV SUPPLY knob to obtain an indication in the center of the MAGNETRON meter white block.									
3.	Energize the TRR A and B transmitters.										
	a.	On the countermeasures control indicator, rotate the MOD A HV knob fully counterclockwise and depress the MAG A-HV ON switch.									
	b.	Adjust the MOD A HV knob to obtain an indication in the center of the green block on the MAG A meter.									
	c.	Repeat a and b above, substituting B for A.									
4.	Check the remote switching from the target track control power supply.										
	a.	On the remote transmitter control, set the LOC-REM switch to LOC.									
		All back-lighted switches on the remote transmitter control are illuminated.									
			Verify that the DIMMER control is fully clockwise.								
			Refer to figure 65.								
	<p>Note: All controls and indicators in b through e below are located on the target track control power supply unless otherwise indicated.</p>										
	b.	Operate the FREQUENCY switch to DECREASE and then to INCREASE.									
		The indication on the FREQUENCY meter does not change in either position.									
			Refer to figure 47.								
	b 1	Position the TTR antenna to obtain video on the lower trace of the range indicator.									
	a.	Operate the RF INTERRUPT switch.									
		The presentation on the upper trace of the range indicator does not change.									
			Refer to figure 65.								
	d.	Set the TRR PULSE WIDTH switch to SHORT and then to LONG.									

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(U) Table 3 18 Weekly Remote Switching Checks TRR and TRR -Continued

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Step	Operation	Normal indication	Corrective procedure
4.	<b>Continued</b>		
		The size of the expanded area on the lower trace of the range indicator does not change.	Refer to figure 65
a	Set the IND switch to R and then to A	The size of the expanded area on the lower trace of the range indicator does not change.	Refer to figure 65
<i>Note</i> A 1 controls in steps 5 and 6 below are located on the remote transmitter control			
5.	<b>Check the remote switching for the TRR.</b>		
a	Set the TRR XMTR MAN SEL—XMTR AUTO SEL switch to XMTR MAN SEL.		
b	Set the TRR MAG switch to A	The pedestal appears under the magnetron A frequency pips on the countermeasures control-indicator	Refer to figure 88
c	Operate the TRR FREQ switch to DECR and then to INCR	Magnetron B can be tuned over the entire frequency range as indicated by the magnetron B frequency pips on the countermeasures control-indicator.	Refer to figure 88
d	Set the TRR—MAG switch to B.	The pedestal appears under the magnetron B pips.	Refer to figure 88
e	Set the TRR—PULSE switch to SHORT and then to LONG	The size of the expanded area on the lower trace of the target range indicator changes (the expanded area is wider in the short pulse mode).	Refer to figure 89
f	(Deleted)		
g	Operate the TRR—PAN switch to NO LOSS.	The video disappears from the lower trace on the target range indicator	Refer to figure 88
h	Set the TRR—XMTR MAN SEL—XMTR AUTO SEL switch to XMTR AUTO SEL.	The pedestal disappears from the upper trace.	Refer to figures 75 and 88.
i	Operate the TRR—FREQ switch to DECR and then to INCR	Magnetron B can be tuned as indicated by the magnetron B frequency pips on the countermeasures control-indicator.	Refer to figures 75 and 88.

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(U) Table 3-18. Weekly Remote Switching Checks—TTR and TRR—Continued

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Step	Operation	Normal indication	Corrective procedure
6.	Check the remote switching for the TTR.		
a.	Operate the TTR—RF INTER switch to RF INTER.	The video disappears from the top trace on the target range indicator.	Refer to figure 65.
b.	Operate the TTR—FREQ switch to DECR and then to INCR.	The indication on the FREQUENCY meter on the target track control-power supply decreases and then increases.	Refer to figure 47.
c.	Set the IND switch to R and then to A.	The size of the expanded area on the lower trace of the target range indicator changes.	Refer to figure 65.
d.	Set the LOC-REM switch to REM.	The back lighting for all switch indicators extinguishes.	Refer to figure 65.
7.	Deenergize the TTR transmitter.		
	On the target track control-power supply, rotate the HV SUPPLY knob to START and depress the HV SUPPLY-OFF switch.		
8.	Deenergize the TRR A and B transmitters.		
a.	On the countermeasures control indicator, rotate the MOD A HV and MOD B HV knobs fully counterclockwise.		
b.	Depress the MAG A—HV OFF and MAG B—HV OFF switches.		
9.	Reestablish the switch positions.		
	On the target antenna control group, set the TEST switch to TEST.		

(U) Table 3-19. Weekly Track Data Processor Checks

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Step	Operation	Normal indication	Corrective procedure
1.	Perform the procedures in table 2-30.		
2.	Prepare for additional track data processor checks.		
a.	On the range radar power control indicator, insure that the TEST—OPERATE switch is set to TEST.		
b.	On the target antenna control group, set the TEST switch to TEST.		
	Note: A switches and indicators are located on the track data processor unless otherwise indicated.		

<sup>1</sup> Omit this step if the checks in the preceding tables have been performed in sequence.**CONFIDENTIAL**

(U) Table 3 19. Weekly Track Data Processor Checks--Continued

## UNCLASSIFIED

Step	Operation	Normal indication	Corrective procedure
3.	Check the microprocessor operation		
a.	Depress and hold the RESET switch	After approximately one second, the RUN indicator extinguishes.	Refer to figure 78 1
		Note Disregard the error message on the POSITION DIFFERENCE indicators while the RESET switch is operated	
b.	Release the RESET switch	The RUN indicator illuminates.	Refer to figure 78 1
		No error message is indicated.	Refer to table 5-29, steps 3 and 4
c.	Momentarily hold MODE SWITCH between any two detent positions	The listed error message is generated $\Delta h = 00$ $\Delta x = EE$ $\Delta y = 01$	Refer to table 5-29, step 4
d.	Set the BANK SELECTOR switch to BANK 2 and MODE SWITCH to TACTICAL	The RUN and NON TACTICAL indicators are illuminated.	Refer to figure 78 1
		On the target track control console, the TDP FAULT indicator is illuminated	Refer to figure 78 1
		The listed error message is generated. $\Delta h = 00$ $\Delta x = EE$ $\Delta y = 02$	Refer to table 5-29, step 4
e.	Set the BANK SELECTOR switch to BANK 1		
4.	Check the MTR/TTR parallax entry.		
	Set MODE SWITCH to TEST MTR/TTR	The RUN and NON-TACTICAL indicators are illuminated.	Refer to figure 78 1
		The POSITION DIFFERENCE (YDS) indicators indicate the same as the MTR/TTR PARALLAX (YDS) switches.	Refer to figure 78 1
		Note The N, E, and UP switch settings indicate +, and the S, W, and DN switch settings indicate -	

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(U) Table 3-19 Weekly Track Data Processor Checks--Continued

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Step	Operation	Normal indication	Corrective procedure
5.	<p>Check the TRR/TTR parallax entry. Set MODE SWITCH to TEST TRR/TTR</p> <p>The RUN and NON TACTICAL indicators are illuminated.</p> <p>Refer to figure 78.1</p> <p>The POSITION DIFFERENCE (YDS) indicators indicate the same as the TRR/TTR PARALLAX (YDS) switches.</p> <p>Refer to figure 78.1</p> <p><i>Note:</i> The N, E, and UP switch settings indicate +, and the S, W, and DN switch settings indicate -</p>		
6.	<p>Check the operation of the serial data receiver</p> <p>a. On the TTR RSPU, set the MODE switch to TEST</p> <p>b. On the MTR RSPU, set the MODE switch to TEST</p> <p>c. Have the computer operator perform the procedures in c 1 through e below</p> <p>c 1 Energize the computer as prescribed in the daily power checks in TM 9-1430-1251-12-1.</p> <p>d. On the keyboard display, enter 7 and depress CR</p> <p>e. Enter TDP and depress CR</p> <p>f. Set MODE SWITCH to SERIAL DATA REC and the BANK SELECTOR switch to BANK 2</p> <p>The track data processor POSITION DIFFERENCE (YDS) indicators do not display any error message.</p> <p>(1) Momentarily operate the RESET switch</p> <p>(2) Perform the procedures in table 5-29, step 4</p> <p>Refer to figure 78.1.</p> <p>The red LED indicator on printed wiring board A4 is flickering.</p> <p>Perform the procedures in table 5-29, step 3</p> <p>g. Set the TTR RSPU and MTR RSPU MODE switches to OPR</p>		
7.	Notify the computer operator that the checks have been completed		
8.	<p>Reestablish the switch positions.</p> <p>a. Set MODE SWITCH to TACTICAL and the BANK SELECTOR switch to BANK 1</p> <p>b. Verify that the required site MTR/TTR parallax is set on the MTR/TTR PARALLAX (YDS) switches</p> <p>c. Verify that the required site TRR/TTR parallax is set on the TRR/TTR PARALLAX (YDS) switches.</p> <p>d. On the range radar power control indicator, set the TEST-OPERATE switch to OPERATE</p>		

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(U) Table 3-29. Weekly Orientation Checks—TTR, MTR and TRR

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Step	Operation	Normal indication	Corrective procedure
	<p><i>Note</i> The procedures in tables 2-3, 3-7, 3-8, 3-16, and 3-17 must be performed before performing the procedures in this table.</p>		
1.	Perform the procedures in table 2-1. <sup>1</sup>		
2.	Install the sighting telescopes on the MTR and TTR antennas.		
	a.	On each antenna support base, set the ANTENNA switch to DISABLE	
	b.	Connect the local antenna controls to the LOCAL ANTENNA CONTROL UNIT connectors on each antenna.	
	c.	On the target track antenna, mount the sighting telescope in the normal position.	
	d.	On the missile track antenna, mount the sighting telescope in the reversed position.	
	e.	Mount the collimating target sights on both sighting telescopes.	
	f.	Set the ANTENNA switches to NORMAL.	
	<p><i>Note</i> If the indications below consistently fall out of the tolerance limits and require frequent adjustments, a malfunction exists and the local support unit should be notified.</p>		
3.	Check the orientation of the TTR		
	a.	Using the local antenna control, position the target track antenna so that the telescope sights on the battery known datum point (target of predetermined azimuth)	
	b.	Observe the indication on the azimuth angle encoder dials.	
		The azimuth angle encoder dials indicate the azimuth of the known datum point $\pm 5$ mils.	
		(1) Unscrew the cap and remove the UNLOCK-LOCK plug from the azimuth angle encoder.	
		<i>Caution</i> When locking or unlocking the input gear, rotate the socket-head screw key until the positive stop is engaged. Do not use a torque wrench.	
		(2) Insert the socket-head screw key into the UNLOCK-LOCK plug and turn approximately nine turns counterclockwise to the positive stop position.	
		(3) Rotate the knob until the dial indicates the azimuth of the known datum point.	

<sup>1</sup> Omit this step if the checks in the preceding tables have been performed in sequence.

(1) Table 7-20 Weekly Orientation Checks: TTR MTR and TTR Continued

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Step	Operation	Normal indication	Effect or procedure
3.	Continued		<p><b>Caution:</b> When locking the input gear, do not stop at the point of maximum torque reaction which occurs at four or five turns from the extreme counterclockwise (unlocked) position. Operation under this condition results in damage to the angle encoder.</p> <p>(4) Starting from the extreme counterclockwise position, turn the socket head screw key clockwise approximately nine turns to the positive stop position.</p> <p>c. Check the azimuth indication on the TTR console.</p> <p>The indication is the same as the KDP value.</p> <p>(1) On the TTR RSPU front panel, set the COORD SELECT switch to A-FCN. The COORD DISPLAY indication equals the azimuth indication on the TTR console.</p> <p>(2) Change the AZIMUTH BORESIGHT setting and momentarily depress the ENTER switch until the KDP value is displayed on the COORD DISPLAY.</p> <p>(3) Record the AZIMUTH BORESIGHT data.</p>
4.	Check the orientation of the MTR.		<p>a. Using the local antenna controls, turn the missile track and target track antennas so that they are pointing in the same direction and the telescopes are facing each other.</p> <p>b. Position the two antennas so that the vertical and horizontal reticles at each telescope are centered on the white lines of the co-illuminating target sight on the other telescope.</p> <p>c. Note and record the indication on the missile track azimuth angle encoder. Designate the indication as <math>A_m</math>.</p> <p>d. Note and record the indication on the target track azimuth angle encoder. Designate the indication as <math>A_t</math>.</p>

(U) Table 3-20. Weekly Orientation Checks- TTR, MTR and TRR-Continued

## UNCLASSIFIED

Step	Operation	Normal indication	Corrective procedure
4.	Continued		
	e. Subtract $A_t$ from $A_m$ .	The difference is not greater than $\pm 5$ mils.	Perform the corrective procedures in step 3b(1) through (4) above for the MTR.
	f. Check the azimuth indication on the MTR console.	The indication is the same as the TTR value.	(1) On the MTR RSPU front panel, set the COORD SELECT switch to A-FCN. The COORD DISPLAY is the same as the azimuth LED display. (2) Change the AZIMUTH BORE-SIGHT setting and momentarily depress the ENTER switch until COORD DISPLAY indicates the correct value. (3) Record the AZIMUTH BORE-SIGHT data.
	g. Note and record the indication on the missile track elevation indicator.	Designate the indication $E_m$ .	
	h. Note and record the indication on the target track elevation indicator.	Designate the indication $E_t$ .	
	i. Subtract $E_t$ from $E_m$ .	The difference is not greater than 0.1 mil.	(1) Perform the procedures in tables 3-7 and 3-8. (2) Repeat the procedures in table 3-20.
5.	Check the orientation of the TRR in azimuth.		
* a	On the TRR antenna support base, set the ANTENNA switch to DISABLE.		
* a-2	On the target range antenna, mount the sighting telescope in the reversed position.		
	b. Mount the collimating target sight on the TRR sighting telescope.		
	b.1. Set the ANTENNA switch to NORMAL.		
	c. Verify that the TTR range is greater than 25,000 yards.		
	d. On the antenna test set, set the CONTROL switch to ANT.		



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Table 3-20 Weekly Orientation Checks-TTR MTR and TRR Continued

**UNCLASSIFIED**

Step	Operation	Normal indication	Corrective procedure
5.	Continued		
e	Using the local antenna control and the antenna test set, rotate the target track and target range antennas so that they are pointing in the same direction and the sighting telescopes are facing each other		
f	Position the two antennas so that the reticles of each sighting telescope are centered on the collimating target sight on the other telescope.		
g	Observe the indication of the AZIMUTH DIAL on the azimuth correction transmitter on the TRR		
h	Observe the indication of the azimuth display on the TTR control console		
i	Subtract the indication in g above from the indication in h above		
	The difference is not greater than 0.1 mil.		
			(1) On the TRR azimuth correction transmitter, perform the corrective procedures in step 3b (1) through (4) above.
			(2) Repeat step 5.
6.	Check the orientation of the TRR in elevation.		
	Perform step 5g through i above using the elevation angle encoders		
	The difference is not greater than 0.3 mil.		
	a	Perform the procedures in table 3-17, step 4	
	* b	Perform the procedures in table 3-16, step 5, a, 2, a, 2, b, 3, c, 5, 6	
	c	Repeat step 6.	
7.	Check the remote orientation.		
	On the antenna test set, set the CONTROL switch to RCT.		
	The reticles of the TRR sighting telescope remain centered on the collimation target sight on the TTR		
	a	Adjust the ELEVATION SERVO CONTROL-ZERO ADJ knob on the antenna control computer to correct an elevation error.	
		Refer to figure 77.	
	b	Adjust the AZIMUTH SERVO CONTROL-ZERO ADJ knob to correct an azimuth error.	
		Refer to figure 76	

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U Table 3-30. Weekly Orientation Checks-TTR, MTR, and TRR Continued

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Step	Operation	Normal indication	Corrective procedure
8.	Return the system to normal operation.		
a	On each antenna support base, set the ANTENNA switch to DISABLE		
b	Remove the sighting telescopes from the missile tracking, target tracking, and target ranging antennas		
c	Remove the local antenna controls and the antenna test set from the missile track, target track, and target range antennas and return them to storage		
d	Set the ANTENNA switches to NORMAL.		

U Table 3-30-1. Weekly Simultaneous Tracking Checks-TTR, MTR, and TRR

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Step	Operation	Normal indication	Corrective procedure
	Perform the procedures in table 2-32.		

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**CONFIDENTIAL****CHAPTER 4 (C)****MONTHLY CHECK PROCEDURES**

*Note:* In some instances, a monthly check may be the same as a daily or weekly check and is not listed in this chapter. Refer to the monthly listing in the table of contents for a sequential listing of all monthly check procedures to be performed.

*(U) Table 4-01 Monthly Power Checks***UNCLASSIFIED**

Step	Operation	Normal indication	Corrective procedure
	Perform the procedures in table 2-1		

*(U) Table 4-02 Monthly Restoration and Demand Function Checks-TTR, MTR and THR***UNCLASSIFIED**

Step	Operation	Normal indication	Corrective procedure
	Perform the procedures in table 3-1		

*(U) Table 4-03 Monthly Leveling Checks-TTR, MTR and THR***UNCLASSIFIED**

Step	Operation	Normal indication	Corrective procedure
	Perform the procedures in table 2-3		

*(U) Table 4-04 Monthly Presentation Checks-TTR***UNCLASSIFIED**

Step	Operation	Normal indication	Corrective procedure
	Perform the procedures in table 3-2.		

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U. Table 4-1 Monthly Transmitter Checks-TTR

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Step	Procedure
1.	<p>Energize the TTR through low voltage Perform the procedures in table 2-1</p> <p>Remove transmitter sync.</p> <p>On the track switch, move target radar control (on) to position 11212 from J5</p> <p>Apply high voltage to the TTR On the target track control power supply, rotate the HV SUPPLY knob to START and depress the HV SUPPLY-ON switch</p> <p>The HV SUPPLY READY indicator light extinguishes, and the HV SUPPLY-ON indicator light illuminates.</p> <p>Refer to figure 63</p> <p>On the radar power control indicator, the TARGET-HIGH VOLTS-PREHEAT, HOT, and READY and the TARGET INTLK indicator lights extinguish. The TARGET-HIGH VOLTS-ON indicator light illuminates.</p> <p>Refer to figure 63</p>
*4.	<p>Check operation of the magnetron arc suppressor</p> <p>a. On the target track antenna support base, set the ANTENNA switch to DISABLE and the BLOWER switch to OFF</p> <p>b. On the target track RF control-power supply, connect a voltmeter between terminal 31 and ground</p> <p>The voltmeter indication is between +145 and +155 volts.</p> <p>Refer to figure 58</p> <p>c. Disconnect the voltmeter</p> <p>d. Disconnect the lead from the magnetron arc suppressor</p> <p>e. Momentarily short the center conductor on the arc suppressor lead to ground. To obtain a ground, the arc suppressor lead can be placed on the alignment pin located above the upper right swinging thumbnut used to secure the target track RF control power supply</p> <p>On the radar power control indicator, the TARGET-HIGH VOLTS-ON indicator momentarily extinguishes.</p> <p>Refer to figure 47.</p> <p>f. Reconnect the lead disconnected in d above</p> <p>g. Set the BLOWER switch to ON and the ANTENNA switch to NORMAL</p>
5.	<p>Check the high voltage circuits.</p> <p>a. Operate the MAGNETRON switch to KV FS-20.</p> <p>b. Adjust the HV SUPPLY knob until an indication of 16 kv is noted on the MAGNETRON meter.</p>

Omit this step if the checks in the preceding tables have been performed in sequence

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(U) Table 4-1 Monthly Transmitter Checks-TTR-Continued

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Step	Operation	Normal indication	Corrective procedure
5	Continued		
	<p><i>Caution</i> When performing c below, insure that the high voltage power supply current, as indicated by the MAGNETRON meter, does not exceed 5 ma</p> <p>c While monitoring both voltage and current by setting the MAGNETRON switcher manually to KV FS=20 and MA FS=100, slowly adjust the HV SUPPLY knob to obtain an indication of 20 kv or 5 ma, whichever occurs first.</p> <p>A voltage of 20 kv can be obtained with a current of 5 ma or less.</p> <p><i>Warning</i> Voltages DANGEROUS TO LIFE exist in the target track receiver-transmitter. Before performing maintenance on the unit, deenergize the system and discharge all capacitors using the shorting bar</p> <p><i>*Note</i> If excessive current is noted, the -500-volt (bias) power supply and pulse amplifier V1 in the TTR receiver-transmitter should be suspected. The bias voltage can be measured in the low voltage condition. Repeating step 5 with the leads to V1 disconnected can isolate V1</p> <p>Refer to figure 47</p> <p>The current indication remains steady.</p> <p>Refer to figure 47</p>		
6	Deenergize the transmitter, and restore normal connections		
	<p>a Rotate the HV SUPPLY knob to START and depress the HV SUPPLY OFF switch</p> <p>b On the track synchronizer, reconnect P212 to J5</p>		
7.	Perform the weekly transmitter check procedures in table 3-3		

(U) Table 4-2 Monthly Target AFC Checks-TTR

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Step	Operation	Normal indication	Corrective procedure
1.	Prepare for the target AFC checks.		
	<p>a. Perform the procedures in table 2-1<sup>1</sup></p> <p>b On the target track control-power supply set the TTR PULSE WIDTH switch to SHORT<sup>1</sup></p>		

Omit this step if the checks in the preceding tables have been performed in sequence

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(U, Table 4.2. Monthly Target AFC Checks—TTR—Continued

## UNCLASSIFIED

Step	Operation	Normal indication	Corrective procedure								
1.	Continued										
	c	On the target antenna control group, set the switches as indicated									
		<table><tr><th>Switch</th><th>Setting</th></tr><tr><td>TEST</td><td>TEST</td></tr><tr><td>AGC—LIN LOG</td><td>AGC</td></tr><tr><td>MULTI BIN</td><td>ZERO</td></tr></table>	Switch	Setting	TEST	TEST	AGC—LIN LOG	AGC	MULTI BIN	ZERO	
Switch	Setting										
TEST	TEST										
AGC—LIN LOG	AGC										
MULTI BIN	ZERO										
	d	On the target error voltage monitor verify that the RCVR TEST switch is not set to XTAL and the BEACON TARGET switch is set to TARGET									
2.	Energize the TTR magnetron transmitter										
		On the target track control-power supply rotate the HV SUPPLY knob to START and depress the HV SUPPLY ON switch. Adjust the HV SUPPLY knob to obtain an indication in the center of the MAGNETRON meter white block.									
3.	Check the crystal current and local oscillator (VTO) output at the monitor panel.										
	a	On the target track antenna support base, set the ANTENNA switch to DISABLE									
	b	Set the BLOWER switch to OFF									
	c	On the target track RF control-power supply, set the FREQUENCY—DECREASE INCREASE switch to INCREASE. Operate and hold the FREQUENCY TUNE switch until the magnetron tuning drive stops.									
		The relative frequency dial on the magnetron tuning drive indicates on the reference line.									
			(1) Remove the flexible cable from the tuning drive.								
			(2) Manually tune the magnetron until the magnetron frequency dial reaches the high frequency stop.								
			(3) Using the FREQUENCY—DECREASE—INCREASE switch and the FREQUENCY TUNE switch, tune the magnetron tuning drive until the relative frequency dial indicates on the reference line.								
			(4) Replace the flexible cable to the tuning drive.								
	d	At the target track receiver-transmitter, set the XTAL SEL switch on the monitor panel to each position from CR1 through CR16.									
		The XTAL CUR meter indicates a steady value between 40 and 100 $\mu$ A for each position.									
			Adjust variable attenuator AT7 on the mixer assembly. Repeat step d.								
		The AFC LOCK indicator on the target AFC is illuminated and steady.									
			Perform the procedures in table 5-1.								

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(U) Table 4-2 Monthly Target AFC Checks—TTR—Continued

**UNCLASSIFIED**

Step	Operation	Normal indication	Corrective procedure
3	Continued		
	e. On the target track AFC, remove the coaxial cable from J3-IF IN	The AFC LOCK indicator extinguishes.	Refer to figure 49
	f. Reconnect the coaxial cable removed in e above to J3-IF IN	The AFC LOCK indicator is illuminated and steady	Perform the procedures in table 5-1
	g. Set the XTAL SEL switch to the position that exhibits the lowest crystal current		
	h. Set the FREQUENCY DECREASE INCREASE switch to DECREASE		
	i. Operate and hold the FREQUENCY-TUNE switch until the magnetron tuning drive stops.	The XTAL CUR meter indicates a steady value between 40 and 100 $\mu$ a.	On the mixer assembly, reset variable attenuator AT7
		The AFC LOCK indicator is illuminated and steady as the magnetron frequency is varied.	Perform the procedures in table 5-1
	j. If mixer assembly variable attenuator AT7 was adjusted, repeat d through i above		
	k. Set the XTAL SEL switch to METER OFF		
	l. Set the BLOWER switch to ON		
	m. Set the ANTENNA switch to NORMAL		
4.	Perform the daily target AFC check procedures in table 2-6, steps 3 and 4.		

(U) Table 4-3 Monthly Radar Test Set Group Checks

**UNCLASSIFIED**

Step	Operation	Normal indication	Corrective procedure
1.	Perform the weekly radar test set group checks.		
	Perform the procedures in table 3-4.		
2.	Check the CAL $\infty$ adjustment.		
	a. Set the switches on the radar test set as indicated:		
	Switch	Setting	
	FUNCTION	CAL	
	MODE	CW	
	METER	0 dBm	

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(U) Table 4-3. Monthly Radar Test Set Group Checks - Continued

**UNCLASSIFIED**

Step	Point on	Normal Indication	Corrective Action								
2.	Continued										
	b. On the radar test set, set the SIGNAL LEVEL switch to 70	The RF POWER dB meter indicates $\infty$ .	Unlock the CAL $\infty$ control and adjust for $\infty$ indication on the meter. Relock the control. Refer to figure 92								
	c. Set the SIGNAL LEVEL switch to 00										
3.	Determine RF oscillator power output.										
	a. Set the switches as indicated	<table border="1"> <thead> <tr> <th>Switch</th><th>Setting</th></tr> </thead> <tbody> <tr> <td>PULSE TEST</td><td>PRIMARY</td></tr> <tr> <td>PULSE WIDTH</td><td>SHORT</td></tr> <tr> <td>FREQ SEL</td><td>TARGET</td></tr> </tbody> </table>	Switch	Setting	PULSE TEST	PRIMARY	PULSE WIDTH	SHORT	FREQ SEL	TARGET	
Switch	Setting										
PULSE TEST	PRIMARY										
PULSE WIDTH	SHORT										
FREQ SEL	TARGET										
	a.1 Perform the procedures in step 2b and c above.										
	b. Observe the RF POWER dB meter indication	The meter indication is between 0 and 2 dB.	Unlock the OUTPUT control and adjust for a meter indication of 1 dB. Relock the control. Refer to figure 92								
4.	Determine RF oscillator tuning range.										
	Note: The test set should have been on for at least 15 minutes before this check is performed										
	a. Set the MEAS FREQ dial to 8,545 MHz	The RF POWER dB meter indicates between 0 and 2 dB.	Unlock the OUTPUT control and adjust for a meter indication of 1 dB. Relock the control. Refer to figure 92.								
	b. Unlock the TARGET OSC control and slowly rotate counterclockwise to obtain a sharp dip (greater than 1 db) in the indication on the RF POWER dB meter	A dip occurs before the TARGET OSC control has been rotated fully counterclockwise	Refer to figures 92 and 93								
	c. (Deleted)										
	d. Set the MEAS FREQ dial to 9,600 MHz										

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(U) Table 4-3. Monthly Radar Test Set Group Checks—Continued

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Step	Operation	Normal indication	Corrective procedure
4	Continued		
		The RF POWER dB meter indicates between 0 and 2 dB.	Unlock the OUTPUT control and adjust for a meter indication of 1 dB. Relock the control. Refer to figure 92
	e. Rotate the TARGET OSC control clockwise to obtain a sharp dip (greater than 1 dB) in the indication on the RF POWER dB meter	A dip occurs before the TARGET OSC control has been rotated fully clockwise	Refer to figures 92 and 93
	f. (Deleted)		
	g. Set the TARGET OSC control to 4.5		
	<i>Caution</i> To prevent possible damage to the frequency meter, do not apply excessive force to the end stop when rotating the MEAS FREQ dial fully clockwise or counterclockwise		
	h. Rotate the MEAS FREQ dial fully counterclockwise		
5.	Perform the pulse tests.		
	a. Unlock the OUTPUT control and adjust for an indication of 0 on the RF POWER dB meter		
	b. Set the MODE switch to PULSE.		
	c. Set the METER switch to -10 dBm.		
	<i>Note</i> With the METER switch set to -10 dBm, random indications (less than 0.3 dB) may occur on the RF POWER dB meter. This condition is acceptable.		
	d. Perform the procedures in step 2b and c above.	The indication on the RF POWER dB meter is between 1.5 and 4.5	Perform the procedures in table 5-28, steps 1, 2, 4, and 5. Refer to figure 93
	e. Adjust the OUTPUT control for an indication of 4 on the RF POWER dB meter		
	f. Set the PULSE WIDTH switch to LONG		
	g. Perform the procedures in step 2b and c above	The indication on the RF POWER dB meter is between 2 and 6	Perform the procedures in table 5-28, steps 1, 2, and 5. Refer to figure 93
	h. Adjust the OUTPUT control for an indication of 4 on the RF POWER dB meter		
	i. Operate the PULSE TEST switch to SECONDARY LO		

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(U) Table 4-3 Monthly Radar Test Set Group Checks- Continued

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Step	Code	Normal indication	Corrective procedure								
5		Continued									
	f.	Perform the procedures in step 2b and c above									
		The indication on the RF POWER dB meter is between $\infty$ and 5.	Refer to figure 93								
	h.	Operate the PULSE TEST switch to SECONDARY HI									
	i.	Perform the procedures in step 2b and c above									
		The indication on the RF POWER dB meter is between 3 and 5.	Refer to figure 93								
6		Perform the signal level tests.									
	a.	Set the switches as indicated									
		<table> <tr> <th>Switch</th><th>Setting</th></tr> <tr> <td>PULSE WIDTH</td><td>SHORT</td></tr> <tr> <td>METER</td><td>0 dB</td></tr> <tr> <td>MODE</td><td>CW</td></tr> </table>	Switch	Setting	PULSE WIDTH	SHORT	METER	0 dB	MODE	CW	
Switch	Setting										
PULSE WIDTH	SHORT										
METER	0 dB										
MODE	CW										
	b.	Perform the procedures in step 2b and c above									
	c.	Adjust the OUTPUT control to obtain an indication of 0 on the RF POWER dB meter									
	d.	Set the SIGNAL LEVEL switch to sequential steps 20, 30, 40, 50, 60, and 70									
		The indication on the RF POWER dB meter is between $\infty$ and 6 for each switch position.	Refer to figure 93								
	e.	Set the SIGNAL LEVEL switch in sequential steps from 00 to 05									
		The indication on the RF POWER dB meter equals the SIGNAL LEVEL switch setting $\pm 1.25$ dB.	Refer to figure 93.								
	f.	Set the METER switch to -5 dBm									
	f1	Perform the procedures in step 2b above.									
	g.	Set the SIGNAL LEVEL switch to 05									
	h.	Adjust the OUTPUT control to obtain an indication of 0 on the RF POWER dB meter									
	i.	Set the SIGNAL LEVEL switch in sequential steps from 05 to 09									
		The indication on the RF POWER dB meter equals 5 $\pm 1.25$ dB less than the SIGNAL LEVEL switch setting.	Refer to figure 93								
7		Check RF power flatness between 8,545 and 9,600 MHz.									
		Note: The test set should have been on for at least 15 minutes before this check is performed.									
	a.	Set the METER switch to 0 dBm									
	b.	Perform the procedures in step 2b and c above									

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(U) Table 4-3 Monthly Radar Test Set Group Checks—Continued

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Step	Operation	Normal Indication	Corrective Procedure
7.	Continued		
	c. Verify that the FILE 2 SELECT switch is in the TARGET position and the TARGET OSC control is set to 4.5.		
	a. Adjust the OUTPUT control for an indication of 1.5 on the RF POWER dB meter. Lock the OUTPUT control.		
	e. Set the MEAS FREQ dial to 8,545.		
	f. Slowly rotate the TARGET OSC control counterclockwise to obtain a sharp dip (greater than 1 db) in the indication on the RF POWER dB meter. Record the setting of the TARGET OSC control.		
	g. Set the MEAS FREQ dial to 9,600.		
	h. Slowly rotate the TARGET OSC control clockwise to obtain a sharp dip (greater than 1 db) in the indication on the RF POWER dB meter. Record the setting of the TARGET OSC control.		
	i. Rotate the MEAS FREQ dial fully clockwise.		
	j. Slowly rotate the TARGET OSC control between the end points recorded in f and h above.		
	The indication on the RF POWER dB meter is between 0 and 3 for all positions of the TARGET OSC control.		
	Refer to figure 93.		
	b. Set the TARGET OSC control to 4.5 and lock the control.		
8.	Check the MISSILE OSC frequency.		
	Note: The test set should have been on for at least 15 minutes before this check is performed.		
	a. Verify that the switches are in the indicated positions.		
	Switch	Setting	
	AC POWER	ON	
	FUNCTION	CAL	
	MODE	CW	
	SIGNAL LEVEL	00	
	FREQ SEL	MISSILE	
	b. Perform the procedures in step 2b and c above.		
	The RF POWER dB meter indicates between 0 and 2.		
	Unlock the OUTPUT control and adjust for a meter indication of 1. Re-lock the control.		
	Note: Verify that the MEAS FREQ dial is not set to oscillator frequency.		
	c. Slowly rotate the MEAS FREQ meter dial until a sharp dip (greater than 1 db) is observed in the RF POWER dB meter indication.		

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(U) Table 4-3. Monthly Radar Test Set Group Checks—Continued

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Step	Operation	Normal Indication	Abnormal Indication												
8.	Continued														
	<p>The indication on the MEAS FREQ dial is within 15 MHz of the assigned missile beacon frequency or assigned TTR receiver operating frequency.</p>		<p>Adjust the MEAS FREQ meter dial to the desired frequency. Unlock the MISSILE OSC frequency control and slowly adjust the control to obtain a dip in the meter indication. Relock the control.</p>												
9.	Check the TARGET OSC frequency.														
	<p>Note: The exact dial indication for a target oscillator reference check is performed.</p>														
	<p>a. Verify that the switches are in the indicated positions.</p>														
	<table border="1"> <thead> <tr> <th>Switch</th><th>Setting</th></tr> </thead> <tbody> <tr> <td>AC POWER</td><td>ON</td></tr> <tr> <td>FUNCTION</td><td>CAL</td></tr> <tr> <td>MODE</td><td>CW</td></tr> <tr> <td>SIGNAL LEVEL</td><td>00</td></tr> <tr> <td>FREQ SEL</td><td>TARGET</td></tr> </tbody> </table>	Switch	Setting	AC POWER	ON	FUNCTION	CAL	MODE	CW	SIGNAL LEVEL	00	FREQ SEL	TARGET		
Switch	Setting														
AC POWER	ON														
FUNCTION	CAL														
MODE	CW														
SIGNAL LEVEL	00														
FREQ SEL	TARGET														
	<p>b. Perform the procedures in step 2b and c above.</p>														
	<p>The RF POWER dB meter indicates between 0 and 2.</p>		<p>Unlock the OUTPUT control and adjust for a meter indication of 1. Relock the control.</p>												
	<p>Note: Verify that the MEAS FREQ dial is near to the oscillator frequency.</p>														
	<p>c. Slowly rotate the MEAS FREQ meter dial until a sharp dip (greater than 1 dB) is observed in the RF POWER dB meter indication.</p>														
	<p>The indication on the MEAS FREQ dial is within 15 MHz of the assigned TTR receiver operating frequency.</p>		<p>Adjust the MEAS FREQ dial to the desired frequency. Unlock the TARGET OSC frequency control and slowly adjust the control to obtain a dip in the meter indication. Relock the control.</p>												
	<p>Note: If no receiver operating frequency is assigned, use 9 000 MHz as the oscillator frequency.</p>														
	<p>d. Rotate the MEAS FREQ meter dial fully clockwise.</p>														
	<p>Check the power output calibration.</p>														
	<p>a. Perform the CAL procedures in step 2 above.</p>														

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(U) Table 4-3. Monthly Radar Test Set Group Checks—Continued

**UNCLASSIFIED**

Step	Operation	Normal indication	Corrective procedure
10.	Continued		
	b. Verify that the TARGET OSC control is set to the desired LAR operating frequency per step 9 above.	The RF POWER dB meter indication is between 0.5 and 1.5	Unlock the OUTPUT control and adjust for a meter indication of 1. Relock the OUTPUT control. Refer to figure 92
	c. Verify that the OUTPUT control is locked.		
11.	Condition the radar test set for remote operation.		
	a. Set the FUNCTION switch to RMT		
	b. Insure that the MEAS FREQ control has been rotated fully clockwise		

(U) Table 4-4. Monthly Beacon AFC Checks—TTR

**UNCLASSIFIED**

Step	Operation	Normal indication	Corrective procedure
	Note: To minimize RF interference, insure that the MTR and TTR antennas are not simultaneously aimed at the radar test set mast or other common object.		
1.	Prepare for the beacon AFC checks.		
	a.	Perform the procedures in table 2-1. <sup>1</sup>	
	b.	On the target antenna control group, set the switches as indicated.	
		Switch	Setting
		TEST	TEST
		MULTI BIN	OFF
	c.	On the target test control, set the switches as indicated.	
		Switch	Setting
		SIGNAL LEVEL	00
		FREQ SELECT	LOCAL
		MODE	CW
		Adjust the FREQUENCY control dial to 500	
	d.	On the target track control, power supply, set the switches as indicated.	
		Switch	Setting
		AGC-MANUAL	AGC
		TTR PULSE WIDTH	LONG

Omit this step if the checks in the preceding tables have been performed in sequence.

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(U) Table 4-4. Monthly Beacon AFC Checks-TTR-Continued

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Step	Operation	Normal indication	Corrective procedure
1.	Continued		
e	On the target error voltage monitor, set the switches as indicated		
	Switch	Setting	
	(IF TEST) -ADJ	ADJ	
	RCVR TEST	BIAS	
	BEACON--TARGET	BEACON	
	PRESET	2	
f.	Momentarily operate the SWEEP PRESET switch.		
	The SWP CENTER indicator is illuminated.		
	Refer to figure 50.		
g.	On the target IF test generator, set the switches as indicated		
	Switch	Setting	
	OSC	ON	
	MODE	CW	
	PULSE WIDTH	SHORT	
	0-90 dB ATTENUATOR	30	
	0-9 dB ATTENUATOR	0	
h.	On the missile control-indicator group, verify that the TARGET-STANDBY MIS-SILE switch is set to STANDBY		
2.	Set frequency of the IF test generator to system IF frequency.		
a.	On the IF test generator, set the COARSE IF FREQ ADJUST control to 0		
b.	While observing the RCVR TEST meter on the target error voltage monitor, adjust the FINE IF FREQ ADJUST control to obtain a maximum indication		
c.	Set the OSC switch to OFF		
3.	Check discriminator output due to receiver noise.		
a.	Set the TTR PULSE WIDTH switch to SHORT		
b.	On the target error voltage monitor, set the RCVR TEST switch to AFC		
	Note: The meter indication in b and c below should be observed for at least 15 seconds.		
	The RCVR TEST meter average indication is approximately 50.		
	(1) On the TTR beacon AFC, adjust the NOISE BAL control		
	(2) Perform the procedures in table 5-2.		

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(U) Table 4-4. Monthly Beacon AFC Check-TTR-Continued

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Step	Operation	Normal indication	Corrective procedure						
3.	Continued								
c	Set the TTR PULSE WIDTH switch to LONG. Operate and hold the AFC SENS switch to HI.	The RCVR TEST meter average indication is approximately 50.	(1) On the TTR beacon AFC, adjust the FREQ TRIM control (2) Perform the procedures in table 5-2.						
d	Release the AFC SENS switch.								
4.	Check the discriminator output slope.								
a	On the target IF test generator, set the OSC switch to ON.								
b	Set the TTR PULSE WIDTH switch to SHORT.	The RCVR TEST meter indicates 50.	On the target IF test generator, adjust the FINE IF FREQ ADJUST control.						
c	Set the COARSE IF FREQ ADJUST control to +1.	The RCVR TEST meter indicates between 65 and 80.	Perform the procedures in table 5-2.						
d	Note the indication on the RCVR TEST meter.								
e	Set the COARSE IF FREQ ADJUST control to -1.								
f	Subtract the indication noted in c above from 100.	The RCVR TEST meter indicates within 10 of the computed number.	Perform the procedures in table 5-2.						
g	On the target IF test generator, set the switches as indicated.								
		<table><tr><th>Switch</th><th>Setting</th></tr><tr><td>OSC</td><td>OFF</td></tr><tr><td>0-90 dB ATTENUATOR</td><td>90</td></tr></table>	Switch	Setting	OSC	OFF	0-90 dB ATTENUATOR	90	
Switch	Setting								
OSC	OFF								
0-90 dB ATTENUATOR	90								
	Set the COARSE IF FREQ ADJUST control to 0.								
5.	Check the beacon AFC loop gain.								
a	Set the RCVR TEST switch to BIAS.								
b	Acquire the radar test set in the CW mode using the procedures in table 2-7, step 2a through g and step 2f and m, using the PRESET 2 control instead of the PRESET 1 COARSE and FINE controls.								

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(U) Table 4-4 Monthly Beacon AFC Checks—TTR—Continued

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Step	Operation	Normal indication	Corrective procedure
5.	Continued		
c	While observing the target error voltage monitor RCVR TEST meter, adjust the FREQUENCY control on the target test control to obtain an indication of 80.		
		The FREQUENCY control dial indicates between 260 and 420.	
			Perform the procedures in table 5-2.
d	Adjust the FREQUENCY control to obtain an indication of 20 on the RCVR TEST meter.		
		The FREQUENCY control dial indicates between 580 and 740.	
			Perform the procedures in table 5-2.
6	Perform the daily beacon AFC check procedures in table 2-7.		

(U) Table 4-5 Monthly In-System AGC Gate and Range Notch Adjustments—TTR and MTR

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Step	Operation	Normal indication	Corrective procedure
1.	Prepare for the TTR checks.		
	a.	Perform the procedures in table 2-1.	
	b.	On the target antenna control group, set the switches as indicated	
		<i>Switch</i>	<i>Setting</i>
		TEST	TEST
		AGC-LIN-LOG	AGC
		MULTI BIN	ZERO
	c.	On the target track control-power supply, set the switches as indicated	
		<i>Switch</i>	<i>Setting</i>
		AGC-MANUAL	AGC
		TTR PULSE WIDTH	SHORT
		IND	R
	d.	On the target error voltage monitor, verify that the BEACON-TARGET switch is set to TARGET	
	e.	On the target track control-power supply, rotate the HV SUPPLY knob to START and depress the HV SUPPLY ON switch. Adjust the HV SUPPLY knob to obtain an indication in the center of the MAGNETRON meter white block	
2.	Prepare for the MTR checks.		
	a.	Perform the procedures in table 2-1.	

<sup>1</sup> Omit this step if the checks in the preceding tables have been performed in sequence.



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(1) Table 15 Monthly in-System AGC Gate and Range Notch Adjustments-TTR and MTR-Continued

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Step	Operation	Normal indication	Corrective procedure
2.	Continued		
b	On the missile track control drawer, set the switches as indicated		
	Switch	Setting	
	TEST	TEST	
	DISABLE	down	
	RANGE	ZERO	
c	On the missile track control-power supply, verify that the AGC-MANUAL switch is set to AGC		
d	On the error voltage monitor, set the BEACON-TARGET switch to TARGET		
e	On the missile track control power supply, rotate the HV SUPPLY knob to START and depress the HV SUPPLY-ON switch. Adjust the HV SUPPLY knob to obtain 3 ma on the MAGNETRON meter		
3.	Check the MTR and TTR AGC gate centering.		
a	Rotate the range handwheel, to center the range gate on the 10th range zero pulse		
b	While observing the range indicator, very slowly rotate the range handwheel, to obtain minimum amplitude of the range zero pulses.		
c	Note the range indication.		
d	Set the TTR range MAN-ACQUIRE AID-TRACK AID-AUTO or MTR range MAN-AID-AUTO switch to AUTO		
	The range indication is within 10 yards of the range noted in c above.		
	On the RSPU, slowly adjust A81 R4 for minimum amplitude of the range zero pulses. Set the range switch to MAN. Perform the procedures in table 5-8. Repeat a through d above.		
	Refer to figure 20 (MTR) or 62 (TTR).		
4.	Check the TTR short pulse and MTR range notch width.		
a	Set the range switch to MAN.		
b	Rotate the range handwheel to center the range notch directly under the selected range zero pulse. Keep the range notch centered during the notch width adjustments.		
	The selected range zero pulse just fits within the range notch.		
	(1) On the RSPU, adjust A81 R2 clockwise until the depth of the notch starts to decrease. Then adjust R2 counterclockwise until the depth just stops increasing.		
	(2) Perform the procedures in table 5-14 for the appropriate radar		

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(U) Table 4-5. Monthly In System AGC Gate and Range Notch Adjustments-TTR and MTR (Continued)

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Step	Operation	Normal indication	Corrective procedure
4.	Continued		(3) Perform the procedures in table 5-8 (TTR) or 5-17 (MTR) to establish the initial pulse widths and delays. Repeat step 4.
5.	Check the TTR short pulse and MTR range notch centering.		
	a. Rotate the range handwheel to place the selected range zero pulse in the range notch.		
	b. Set the range switch to AUTO.	The negative portions of the range zero pulse centered in the range notch are equal in amplitude.	(1) On the RSPU, adjust A31 R1 as required. (2) Set the range switch to MAN and perform the procedures in table 5-8 (TTR) or 5-17 (MTR) to establish the initial pulse widths and delays. Repeat steps 4 and 5 above.
	c. Set the range switch to MAN.		
6.	Check the TTR long pulse range notch width.		
	a. On the target track control-power supply, set the TTR PULSE WIDTH switch to LONG.		
	b. Repeat step 4b above and adjust variable resistor R8 on A31 as required. If the clockwise range of R8 is insufficient, leave R8 set for the narrowest range notch width possible.		
7.	Check the TTR long pulse range notch position.		
	Repeat step 5a through c above. Adjust variable resistor R9 on A31 as required.		
8.	Establish the TTR operational status.		
	a. On the target track control-power supply, rotate the HV SUPPLY knob to START and depress the HV SUPPLY-OFF switch.		
	b. On the target antenna control group, set the MULTI BIN switch to OFF.		
9.	Establish the MTR operational status.		
	a. On the missile track control-power supply, rotate the HV SUPPLY knob to START and depress the HV SUPPLY-OFF switch.		
	b. On the missile error voltage monitor, set the BEACON-TARGET switch to BEACON.		
	c. On the missile track control drawer, set the RANGE switch to NORMAL.		

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(U, Table 4-5.1 Monthly RSPL Checks—TTR and MTR

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Step	Operation	Normal indication	Corrective procedure
	Perform the procedures in table 3-5.		

(U, Table 4-5.2 Monthly Range System Checks—TTR

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Step	Operation	Normal indication	Corrective procedure
	Perform the procedures in table 2-8.		

Table 4-6 Monthly Monopulse Receiver Checks—TTR

UNCLASSIFIED

Step	Operation	Normal indication	Corrective procedure										
	<p><i>Note:</i> To minimize RF interference, insure that the MTR and TTR antennas are not simultaneously aimed at the radar test set mast or other common object.</p>												
1	Prepare for the monopulse receiver checks.												
	a. Perform the procedures in table 2-1.												
	b. On the target antenna control group, set the switches as indicated.												
	<table><tr><th>Switch</th><th>Setting</th></tr><tr><td>TEST</td><td>TEST</td></tr><tr><td>MULTI BIN</td><td>OFF</td></tr><tr><td>RANGE TRACK</td><td>TTR</td></tr><tr><td>AGC-LIN-LOG</td><td>AGC</td></tr></table>			Switch	Setting	TEST	TEST	MULTI BIN	OFF	RANGE TRACK	TTR	AGC-LIN-LOG	AGC
Switch	Setting												
TEST	TEST												
MULTI BIN	OFF												
RANGE TRACK	TTR												
AGC-LIN-LOG	AGC												
	c. On the target test control, set the switches as indicated.												
	<table><tr><th>Switch</th><th>Setting</th></tr><tr><td>SIGNAL LEVEL</td><td>00</td></tr><tr><td>FREQ SELECT</td><td>REMOTE</td></tr><tr><td>MODE</td><td>PULSE</td></tr><tr><td>PULSES</td><td>SINGLE</td></tr></table>			Switch	Setting	SIGNAL LEVEL	00	FREQ SELECT	REMOTE	MODE	PULSE	PULSES	SINGLE
Switch	Setting												
SIGNAL LEVEL	00												
FREQ SELECT	REMOTE												
MODE	PULSE												
PULSES	SINGLE												
	d. On the target track control-power supply, set the switches as indicated.												
	<table><tr><th>Switch</th><th>Setting</th></tr><tr><td>AGC-MANUAL</td><td>AGC</td></tr><tr><td>TTR PULSE WIDTH</td><td>LONG</td></tr><tr><td>IND</td><td>R</td></tr></table>			Switch	Setting	AGC-MANUAL	AGC	TTR PULSE WIDTH	LONG	IND	R		
Switch	Setting												
AGC-MANUAL	AGC												
TTR PULSE WIDTH	LONG												
IND	R												

Omit this step if the checks in the preceding tables have been performed in sequence.

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(U) Table 5-6 Monthly Monopulse Receiver Checks-TTR-Continued

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Step	Operation	Normal indication	Corrective procedure														
1.	Continued																
	e On the target error voltage monitor, set the switches as indicated.																
	<table border="1"> <thead> <tr> <th>Switch</th> <th>Setting</th> </tr> </thead> <tbody> <tr> <td>(IF TEST)—ADJ</td> <td>ADJ</td> </tr> <tr> <td>RCVR TEST</td> <td>BIAS</td> </tr> <tr> <td>BEACON—TARGET</td> <td>BEACON</td> </tr> <tr> <td>PRESET</td> <td>I</td> </tr> <tr> <td>VID MON</td> <td>SUM</td> </tr> </tbody> </table>	Switch	Setting	(IF TEST)—ADJ	ADJ	RCVR TEST	BIAS	BEACON—TARGET	BEACON	PRESET	I	VID MON	SUM				
Switch	Setting																
(IF TEST)—ADJ	ADJ																
RCVR TEST	BIAS																
BEACON—TARGET	BEACON																
PRESET	I																
VID MON	SUM																
	f On the target error voltage monitor, momentarily operate the SWEEP PRESET switch.																
	The SWP CENTER indicator is illuminated.		Refer to figure 50														
	g On the missile control indicator group, verify that the TARGET—STANDBY—MIS-SILE switch is set to STANDBY.																
	h On the IF test generator, verify that the OSC switch is set to OFF.																
	Note: For the remainder of this table, switches and meters are located on the target error voltage monitor unless otherwise indicated.																
2.	Check the gain setting of the sum main IF amplifier.																
	Observe the RCVR TEST meter.																
	The average AGC bias indication is between 0 and 10.																
			(1) On the target sum main IF amplifier, adjust the GAIN ADJ control to obtain an average indication of 5 on the meter.														
			(2) Perform the procedures in table 5-3.														
3.	Check the AGC level setting.																
	a. On the TTR IF test generator, set the switches as indicated.																
	<table border="1"> <thead> <tr> <th>Switch</th> <th>Setting</th> </tr> </thead> <tbody> <tr> <td>OSC</td> <td>ON</td> </tr> <tr> <td>MODE</td> <td>CW</td> </tr> <tr> <td>SLEW RATE</td> <td>OFF</td> </tr> <tr> <td>0-90 dB ATTENUATOR</td> <td>30</td> </tr> <tr> <td>0-9 dB ATTENUATOR</td> <td>0</td> </tr> <tr> <td>PULSE WIDTH</td> <td>LONG</td> </tr> </tbody> </table>	Switch	Setting	OSC	ON	MODE	CW	SLEW RATE	OFF	0-90 dB ATTENUATOR	30	0-9 dB ATTENUATOR	0	PULSE WIDTH	LONG		
Switch	Setting																
OSC	ON																
MODE	CW																
SLEW RATE	OFF																
0-90 dB ATTENUATOR	30																
0-9 dB ATTENUATOR	0																
PULSE WIDTH	LONG																
	b. On the IF test generator, adjust the FINE and COARSE IF FREQ ADJUST controls for maximum indication on the RCVR TEST meter.																
	c. Set the (IF TEST)—ADJ switch to (IF TEST) and the RCVR TEST switch to (SUM).																

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(U) Table 4-6. Monthly Monopulse Receiver Checks-TTR-Cont. next

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Step	Operation	Normal indication	Corrective procedure
3.	Continued		
		The RCVR TEST meter indicates between 45 and 55	On the target IF distribution and AGC control, adjust the AGC ADJ control to obtain an indication of 50 on the meter Refer to figure 48
4	Check the AGC response		
a	On the IF test generator, vary the 0-90 dB ATTENUATOR switch in 10-db steps from 0 to 50 dB	The RCVR TEST meter indicates between 45 and 55	Refer to figure 48
b	Vary the 0-90 dB ATTENUATOR switch in 10 db steps from 50 to 90 dB	The RCVR TEST meter average indication is between 40 and 60	Refer to figure 48
5.	Check the sum video gain.		
a	On the IF test generator, set the 0-90 dB ATTENUATOR switch to 0 dB. Momentarily depress the RANGE PRE-SET switch. Set the MODE switch to PULSE		
b	Set the TTR range to place the IF test pulse adjacent to the range notch. Note the signal amplitude on the range indicator		
c	On the IF test generator, use the RANGE TRIM control to center the test pulse in the range notch to obtain minimum pulse amplitude.	The signal amplitude relative to the sweep baseline is between one-third and one-half of the amplitude noted in b above	Perform the procedures in table 5-3, step 5 Refer to figure 48
d	On the IF test generator, set the MODE switch to CW		
6	Check gain variation between the IF amplifiers.		
	Note: Normally, gain variations are due to compensations made for gain variations in the receiver RF and IF signal paths in table 5-3		
a	On the IF test generator, verify that the OSC switch is set to ON and set the 0-90 dB ATTENUATOR switch to 30 dB		
b	Set the RCVR TEST switch to (AZ)	The RCVR TEST meter indicates between 30 and 80	Set the IF test generator OSC switch to OFF, and perform the procedures in table 5-3, step 7. Set the OSC switch to ON. Repeat step 1g above

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U, Table 4-6, Monthly Monopulse Receiver Checks-TTR-Continued

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Step	Operation	Normal procedure	Corrective procedure
6.	Continued		
	c. Set the RCVR TEST switch to (EL)	The RCVR TEST meter indicates between 30 and 80.	Set the IF test generator OSC switch to OFF, and perform the procedures in table 5-3, step 7. Set the OSC switch to ON. Repeat step 1g above
	d. On the IF test generator, set the OSC switch to OFF		
	e. Set the RCVR TEST switch to BIAS and the (IF TEST) ADJ switch to ADJ		
7.	Check the operation of the pre-attenuator		
	a. On the target error voltage monitor, set the BEACON TARGET switch to TARGET		
	b. On the target error voltage monitor, hold the REMOTE-LOCAL switch in LOCAL and adjust the MAN GAIN control maximum clockwise		
	c. While observing the RCVR TEST meter, slowly adjust the MAN GAIN control, counter clockwise until the audible sound of the pre-attenuator operating is heard	The RCVR test meter indicates between 30 and 75.	Refer to figure 48
	d. While observing the RCVR TEST meter, slowly adjust the MAN GAIN control clockwise until the audible sound of the pre-attenuator deenergizing is heard		

(U) Table 4-6. Monthly Monopulse Receiver Checks-TTR-Continued

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Step	Operation	Normal indication	Corrective procedure
7	Continued		
		The RCVR TEST meter indicates between 20 and 45.	Refer to figure 48
	e. Release the REMOTE-LOCAL switch.		
	f. Set the BEACON-TARGET switch to BEACON.		
8.	Check the target signal strength meter.		
	a. Hold the REMOTE-LOCAL switch in LOCAL, and adjust the MAN GAIN control to obtain an indication of 10 on the RCVR TEST meter.		
		The TARGET SIGNAL STRENGTH meter on the target tracking console indicates between 5 and 15.	Refer to figure 48
	<i>Note.</i> Each major meter division equals approximately 10 db		
	b. Adjust the MAN GAIN control to obtain an indication of 90 on the RCVR TEST meter		
		The TARGET SIGNAL STRENGTH meter on the target tracking console indicates between 85 and 95.	Refer to figure 48
	c. Release the REMOTE-LOCAL switch		
9.	Check the sum, azimuth, and elevation channel receiver sensitivity.		
	a. On the target track control-power supply, set the TTR PULSE WIDTH switch to SHORT		
	b. Perform the procedures in table 2-7, steps 2 and 3 and table 2-9, steps 4b through 8		
		The sum SIGNAL LEVEL switch indication obtained in table 2-9, step 6c does not exceed the last computed TTR receiver sensitivity figure by more than 5 db.	Perform the procedures in table 5-4 to obtain a new computed TTR receiver sensitivity figure.
	c. Remove the coaxial cable from CP1-A T VIDEO TEST and the VID MON coaxial jack		
	d. On the target test control, set the PULSES switch to SINGLE		
	e. On the test adapter, set the AMP ON-OFF switch to OFF.		
	f. Set the TEST IND (S23) switch to OFF		
10.	Check the receiver overload circuit operation.		
	a. On the target test control, set the SIGNAL LEVEL switch to 20		
		The radar signal is stable and centered in the range notch	Reacquire the radar test set using the procedures in table 2-7, step 2.

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(U) Table 4-6. Monthly Monopulse Receiver Checks-TTR-Continued

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Step	Operation	Normal indication	Corrective procedure
10.	Continued		
	b	While observing the AZ ANGLE ERROR and EL ANGLE ERROR meters, position the antenna coordinates to obtain an indication of approximately +5 mils on each meter	
	c	Note the indication on the target track control console TARGET SIGNAL STRENGTH meter	
	d	On the target track control power supply, set the AGC-MANUAL switch to MANUAL and adjust the receiver GAIN control for the same meter indication noted in c above	
	e	On the target test control, set the SIGNAL LEVEL switch to 12	
		The AZ ANGLE ERROR and EL ANGLE ERROR meters still indicate +3 mils or greater.	
			Perform the procedures in table 5-5
	f	Set the SIGNAL LEVEL switch to 08.	
		The AZ ANGLE ERROR and EL ANGLE ERROR meters indicate approximately 0 mils.	
			Perform the procedures in table 5-5.
11.	Reestablish the switch positions.		
	a	On the target test control, set the SIGNAL LEVEL switch to 70	
	b	On the target antenna control group, set the range MAN-ACQUIRE AID-TRACK AID-AUTO switch to MAN and set the MULTI BIN switch to OFF	
	c	On the target error voltage monitor, set the BEACON-TARGET switch to TARGET	
	d	On the missile antenna control indicator group, set the TARGET-STANDBY MIS-SILE switch to STANDBY	
	e	On the target track control power supply, set the AGC-MANUAL switch to AGC.	

(U) Table 4-7. Monthly High Power Servo Amplifier Checks-TTR, MTR, and TRR

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Step	Operation	Normal indication	Corrective procedure
1.	Prepare for the high power servo amplifier (HPSA) checks.		
	a.	Perform the procedures in table 2-1. <sup>1</sup>	
	b.	On the missile radar control console, set the azimuth, elevation, and range MAN-AID-AUTO switches to MAN	
	c.	On the target radar control console, set the azimuth and elevation MAN-AID-AUTO switches to MAN. Set the range MAN-ACQUIRE AID-TRACK AID-AUTO switch to MAN	
	Note.	This procedure is the same for the TTR, MTR, and TRR using the controls and indicators peculiar to each.	

<sup>1</sup> Omit this step if the checks in the preceding tables have been performed in sequence.**CONFIDENTIAL**



(U) Table 17 Monthly High Power Servo Amplifier Checks—TTR MTR and TRR—Continued

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Step	Operation	Normal indication	Corrective procedure			
2.	Perform the HP SA checks.					
a	Pull out the upper left sliding frame of the azimuth drive equipment enclosure on the antenna support base					
	<i>Caution</i> Connect the multimeter leads after operating the HP AZ AMP BAL switch in <i>b</i> and <i>f</i> below.					
b.	Operate and hold the HP AZ AMP BAL switch.					
c	Set the controls of a multimeter to indicate ac voltage and connect it between the AZ1 and NEUT test points.					
d	On the left HP SA, adjust the BALANCE variable resistor to obtain a minimum indication on the multimeter					
	The multimeter indicates less than 4 volts.					
			Refer to figure 18 (MTR)			
			Refer to figure 53 (TTR)			
			Refer to figure 76 (TRR)			
	<i>Caution</i> Remove the multimeter leads before releasing the HP AZ AMP BAL switch in <i>e</i> and <i>h</i> below.					
e	Disconnect the multimeter and then release the HP AZ AMP BAL switch					
f	Operate the HP AZ AMP BAL switch and then connect the multimeter between the AZ2 and NEUT test points.					
g.	On the right HP SA, adjust the BALANCE variable resistor to obtain a minimum indication on the multimeter					
	The multimeter indicates less than 4 volts.					
			Refer to figure 18 (MTR).			
			Refer to figure 53 (TTR)			
			Refer to figure 76 (TRR)			
h.	Disconnect the multimeter and then release the HP AZ AMP BAL switch.					
i.	Repeat <i>a</i> through <i>h</i> above for the sliding frame and HP SA indicated below using the controls peculiar to each					
	HP AMP BAL		Refer to figure			
	Slide/HP SA	Switch	Test points	MTR	TTR	TRR
	Center/left	AZ	AZ3 and NEUT	18	53	76
	Center/right	AZ	AZ4 and NEUT	18	53	76
	Lower left/left	EL	EL1 and NEUT	19	54	77
	Lower left/right	EL	EL2 and NEUT	19	54	77
	Bottom right/left	EL	EL3 and NEUT	19	54	77
	Bottom right/right	EL	EL4 and NEUT	19	54	77

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(U) Table 4-8. Monthly Tracking Servo Checks TTR

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Step	Operation	Normal indication	Corrective procedure
1	Perform the procedures in table 3-6. If the checks in the preceding tables have been performed in sequence, omit step 2 of table 3-6.		
2	Perform the range servo balance check.		
	a. On the target antenna control group, set the range MAN AID AUTO switch to MAN.		
	b. Observe the range displays on the target range indicator.	The range displays are stationary.	On the range handwheel drive control, adjust the BAL variable resistor. Refer to figure 52.
3	Perform the range handwheel calibration in the short pulse mode.		
	a. On the target track control power supply, set the TTR PULSE WIDTH switch to SHORT.		
	b. Set the TTR range to 20,000 yards.		
	c. Rotate the range handwheel clockwise 10 turns.	The TTR range indication is between 21,450 and 22,050 yards.	Perform the procedures in table 6-3, step 4d.
4	Perform the range handwheel calibration in the long pulse mode.		
	a. Set the TTR PULSE WIDTH switch to LONG.		
	b. Set the TTR range to 20,000 yards.		
	c. Rotate the range handwheel clockwise 10 turns.	The TTR range indication is between 27,000 and 28,000 yards.	Perform the procedures in table 6-3, step 4e.
5	Perform the azimuth servo balance checks.		
	a. On the target antenna control group, set the azimuth MAN AID AUTO switch to MAN.	The azimuth displays are stationary.	On the azimuth handwheel drive control, adjust the BAL variable resistor. If the BAL adjustment range is insufficient, connect a test lead from terminal 7 of the azimuth handwheel drive motor tach to ground. Adjust R27, BAL 2, in the target antenna control group to stop the displays. Remove the test lead and repeat step 5.

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(U) Table 4-3. Monthly Tracking Servo Checks-TTR-Continued

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Step	Operation	Normal indication	Corrective procedure
5.	<b>Continued</b>		
	<i>Note.</i> Do not move the azimuth handwheel in <i>b</i> and <i>c</i> below.		
	<i>b</i> Set the azimuth MAN-AID-AUTO switch to AID.	The azimuth displays are stationary.	On the azimuth handwheel drive control, adjust the R3 variable resistor mounting bracket.
	<i>c</i> Set the azimuth MAN-AID-AUTO switch to MAN, then to AID and back to MAN.	The azimuth displays remain stationary.	Repeat the procedures in <i>a</i> through <i>c</i> above.
6.	<b>Perform the elevation servo balance checks.</b>		
	<i>Note.</i> Verify that the TTR antenna elevation is between 0 and 3.200 mils.		
	<i>a</i> On the target antenna control group, verify that the elevation MAN-AID-AUTO switch is set to MAN.	The elevation displays are stationary.	On the elevation handwheel drive control, adjust the R3 variable resistor.
	<i>b</i> Set the elevation MAN-AID-AUTO switch to AID.	The elevation displays are stationary.	On the elevation handwheel drive control, adjust the R3 variable resistor mounting bracket.
	<i>c</i> Set the elevation MAN-AID-AUTO switch to MAN, then to AID and back to MAN.	The elevation displays remain stationary.	Repeat the procedures in <i>a</i> through <i>c</i> above.
7.	<b>Perform the range servo aided rate check.</b>		
	<i>a</i> Set the TTR range to approximately 100,000 yards.		
	<i>b</i> Set the TTR RSPU COORD SELECT switch to D RATE.		
	<i>c</i> Set the range MAN-ACQUIRE AID-TRACK AID-AUTO switch to ACQUIRE AID.		
	<i>d</i> Rotate the range handwheel four and one-half turns counterclockwise.	The TTR RSPU COORD DISPLAY indicates between -1,656 and -2,328 yards/second. Note the indication.	Set the range MAN-ACQUIRE AID-TRACK AID-AUTO switch to MAN. Set the TTR RSPU COORD SELECT switch to D-FCN. Perform the procedures in table 6-3, step 4e. Repeat the procedures in <i>a</i> through <i>d</i> above.

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(U) Table 4-8. Monthly Tracking Servo Checks-TTR-Continued

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Step	Operation	Normal indication	Corrective procedure
7.	Continued		
e	Set the MAN ACQUIRE AID-TRACK AID-AUTO switch to TRACK AID	The TTR RSPU COORD DISPLAY indication is within 25 of the indication noted in d above	Refer to figure 54.4
f	Set the range MAN ACQUIRE AID-TRACK AID-AUTO switch to MAN		
8.	Perform the azimuth servo rate checks.		
a.	Position the TTR antenna elevation to 0 mils.		
b.	Set the TTR range to 1,500 yards.		
c.	On the TTR RSPU, set the COORD SELECT switch to Y-RATE		
d.	Set the azimuth MAN AID-AUTO switch to AID		
e	Rotate the azimuth handwheel, six turns clockwise or counterclockwise.	The indication on the TTR RSPU COORD DISPLAY varies. The maximum negative and maximum positive indications are both between 600 and 648 yards/second.	On the azimuth coupling resistor assembly, adjust the AZIMUTH-AID variable resistor.
f	On the target antenna control group, set the SERVOS switch to INC and the azimuth MAN AID-AUTO switch to AUTO. Wait approximately 30 seconds until the antenna rate becomes steady.	The indication on the TTR RSPU COORD DISPLAY varies. The maximum negative and maximum positive indications are both between 984 and 1,080 yards/second.	On the azimuth coupling resistor assembly, adjust the AZIMUTH-AUTO variable resistor. After each adjustment, allow the antenna rate to become steady. Refer to figure 53.
g	Set the azimuth MAN-AID-AUTO switch to MAN and the SERVOS switch to NORMAL.		
9.	Perform the elevation servo rate checks.		
a.	Verify that the TTR range is set to 1,500 yards.		
b	Rotate the azimuth handwheel, to obtain a TTR azimuth indication of 0 mils		
c	Rotate the elevation handwheel to position the TTR antenna elevation to 0 mils		
d	On the target elevation coupling resistor assembly, depress and hold the ELEVATION PRE AMP BAL switch.		
e	Set the elevation MAN AID-AUTO switch to AID, and rotate the elevation handwheel six turns clockwise.		
	Caution Set the elevation MAN-AID-AUTO switch to MAN before the TTR antenna reaches 3,200 mils.		

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(U) Table 4-8 Monthly Tracking Servo Checks—TTR Continued

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Step	Operation	Normal indication	Corrective procedure
9.	Continued		
f	While carefully observing the TTR RSPU COORD DISPLAY, release the ELEVATION PRE AMP switch	The first maximum TTR RSPU COORD DISPLAY indication is between -600 and -648 yards/second. The maximum indication occurs at 1,600 mils elevation	On the elevation coupling resistor assembly, adjust the ELEVATION AID variable resistor. Set the elevation MAN-AID-AUTO switch to MAN, and repeat c through f above
g.	Set the elevation MAN AID--AUTO switch to MAN		
h	Rotate the elevation handwheel to position the TTR antenna elevation to 0 mils		
i.	Depress and hold the ELEVATION PRE AMP BAL switch		
j	Set the elevation MAN AID-AUTO switch to AUTO and the SERVOS switch to INC		
	<b>Caution</b> Set the elevation MAN AID-AUTO switch to MAN before the TTR antenna reaches 3,200 mils.		
k	After approximately 30 seconds and while carefully observing the RSPU COORD DISPLAY, release the ELEVATION PRE AMP BAL switch	The first maximum TTR RSPU COORD DISPLAY indication is between -984 and -1,080.	On the elevation coupling resistor assembly, adjust the ELEVATION-AUTO variable resistor. Set the elevation MAN AID-AUTO switch to MAN, and repeat k through k above
			Refer to figure 54
l	Set the elevation MAN AID-AUTO switch to MAN and the SERVOS switch to NORMAL		
m.	Set the TTR RSPU COORD SELECT switch to D-FCN		

(U) Table 4-9 Monthly Telescope Checks—TTR, MTR, and TRR

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Step	Operation	Normal indication	Corrective procedure
1.	Perform the procedures in table 2-1. <sup>1</sup>		

<sup>1</sup>Omit this step if the checks in the preceding tables have been performed in sequence.

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(U) Table 4 D. Monthly Telescope Checks—TTR, MTR and TRR—Continued

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Step	Procedure	Remarks
2	Perform the sighting telescope reticle check on the TTR and MTR	
a	On the MTR and TTR antenna support bases set the ANTENNA switches to IN-ABLE	
a-1	Connect the local antenna controls	
	Insert all the A blocks and scan antenna at the sighting telescope, set in the reverse position	
	Remove the telescope assembly kit from the spare parts cabinet and install the mounting brackets in the two rear holes on the telescope mount	
a-2	Install the reticle level targets on the mounting brackets to face in the same direction as the telescope in b above	
a-3	Adjust the eyepieces of the telescopes so that the crosshairs are in sharp focus	
a-4	Set the ANTENNA switches to NORMAL	
a-5	Using the local antenna control, range the antenna in elevation	
a-6	Position both antennas in azimuth and elevation so that the optical lines of sight intersect the center of the reticle level targets	
a-7	Adjust the focus knob until the reticle level target is in sharp focus	
	Note: While performing b through m below, do not antenna mount the antenna remains stationary	
b	Position the antenna so that the telescope crosshairs are centered on the reticle level target on the other antenna and are parallel to the horizontal target rulings	
c	Rotate the sighting telescope 180 degrees about its optical axis and observe the direction the horizontal crosshair moves relative to the horizontal target rulings	
	Note: Return the telescope to its original position, level vial down	
d	If the relative direction of the telescope crosshair was upward, position the antenna so that the horizontal telescope crosshairs parallel to the horizontal target rulings are 1 above the lower ruling a distance equal to the width of the crosshair of the reticle level target	
e	If the relative direction of the telescope crosshair was downward, position the antenna so that the horizontal telescope crosshairs parallel to the horizontal target rulings and below the upper ruling a distance equal to the width of the crosshair of the reticle level target	
f	Rotate the sighting telescope 180 degrees about its optical axis	
	The separation of the horizontal crosshair below the upper ruling or above the lower ruling is at least the width of the crosshair	
	Replace the telescope	
g	Repeat the procedures in c through m above for the vertical crosshair using the vertical rulings on the reticle level target	
h	Perform the procedures in c through n above for the other antenna	
i	Reverse the sighting telescopes so that they are mounted in the normal position	

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(U) Table 4-9.1 Telescope Checks—TTR and MTR Continued

**UNCLASSIFIED**

Step	Operation	Normal indication	Corrective procedure
3.	Perform the reticle level check.		
a	Using the local antenna control, position the antenna until the horizontal crosshair is centered on a well-defined line or point target.		
b	Without changing the antenna elevation position on the antenna in azimuth so that the horizontal crosshair traverses the target.		
		The horizontal reticle does not deviate from the point selected.	Loosen the locknut, and on the telescope mount, adjust the reticle level adjustment.
4.	Perform the sighting telescope reticle check on the TRR.		
a	On the TRR antenna support base, set the ANTENNA switch to DISABLE.		
a.1	Connect the antenna test set, and set the CONTROL switch to ANT.		
a.2	Set the ANTENNA switch to NORMAL.		
b	Perform the procedures in step 2b through c above, using the reticle level target on the TTR with the TRR plunger in elevation.		
c	Reverse the sighting telescope to the normal position.		
5.	Perform the reticle level check on the TRR telescope.		
	Perform the procedures in step 3 above.		
6.	Return the tracking antennas to normal operation.		
a	On each antenna support base, set the ANTENNA switch to DISABLE.		
b	Disconnect the local antenna controls and antenna test set, and remove the telescopes.		
c	Set the ANTENNA switches to NORMAL.		

(U) Table 4-9.1 Monthly Bore-sight Checks—TTR and MTR

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Step	Operation	Normal indication	Corrective procedure
	Perform the procedures in table 3-7.		

(U) Table 4-9.2 Monthly Telescope Collimation Checks—TTR and MTR

**UNCLASSIFIED**

Step	Operation	Normal indication	Corrective procedure
	Perform the procedures in table 3-8.		

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(U) Table 4 10. Monthly Lin-Log Receiver Checks-TTR

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Step	Procedure	Normal indication	Corrective procedure										
	<p><i>Note:</i> To minimize RF interference, insure that the MTR and TTR antennas are not simultaneously aimed at the radar test set mast or other common object.</p>												
1.	Prepare for the lin-log receiver checks.												
	<p>a. Perform the procedures in table 2-1.<sup>1</sup></p> <p>b. On the target antenna control group, set the switches as indicated.</p> <table border="1"> <thead> <tr> <th>Switch</th> <th>Setting</th> </tr> </thead> <tbody> <tr> <td>TEST</td> <td>TEST</td> </tr> <tr> <td>AGC-LIN-LOG</td> <td>LIN-LOG</td> </tr> <tr> <td>RANGE TRACK</td> <td>TTR</td> </tr> <tr> <td>MULTI BIN</td> <td>OFF</td> </tr> </tbody> </table>			Switch	Setting	TEST	TEST	AGC-LIN-LOG	LIN-LOG	RANGE TRACK	TTR	MULTI BIN	OFF
Switch	Setting												
TEST	TEST												
AGC-LIN-LOG	LIN-LOG												
RANGE TRACK	TTR												
MULTI BIN	OFF												
	<p>c. On the target track control, power supply, set the switches as indicated.</p> <table border="1"> <thead> <tr> <th>Switch</th> <th>Setting</th> </tr> </thead> <tbody> <tr> <td>TTR PULSE WIDTH</td> <td>LONG</td> </tr> <tr> <td>AGC-MANUAL</td> <td>AGC</td> </tr> <tr> <td>IND</td> <td>R</td> </tr> </tbody> </table>			Switch	Setting	TTR PULSE WIDTH	LONG	AGC-MANUAL	AGC	IND	R		
Switch	Setting												
TTR PULSE WIDTH	LONG												
AGC-MANUAL	AGC												
IND	R												
	<p>d. On the target error voltage monitor, verify that the BEACON TARGET switch is set to TARGET.</p> <p>e. On the IF test generator, verify that the OSC switch is set to OFF.</p> <p>f. On the missile control indicator group, verify that the TARGET STANDBY MISSILE switch is set to STANDBY.</p> <p>g. Set the TTR range to less than 20,000 yards.</p>												
	<p><i>Note:</i> The following check procedures will require a voltmeter.</p>												
2.	Check the dc balance of the logarithmic IF amplifier.												
	<p>a. On the TTR logarithmic IF amplifier, disconnect P176 from J2-IF INPUT.</p> <p>b. On the scaling frame for the lin-log receiver, connect a dc voltmeter between TP1 (LIN LOG NOISE) and TP2 (DC GND). Connect the positive lead to TP1.</p> <p>The voltmeter indicates between +0.1 and -0.1 volts.</p> <p>On the TTR logarithmic IF amplifier, adjust the DC OFFSET control.</p> <p>Refer to figure 48.</p>												
	<p>c. Reconnect P176 to J2-IF INPUT.</p>												
3.	Check the gain setting of the linear IF amplifier.												
	<p>a. Observe the voltmeter connected in step 2b above.</p>												

<sup>1</sup> Omit this step if the checks in the preceding tables have been performed in sequence.**CONFIDENTIAL**



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(U) Table 4-10. Monthly Lin Log Receiver Checks-TTR-Continued

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Step	Operation	Normal indication	Corrective procedure
3.	Continued		
		The voltmeter indicates between 0.6 and 0.8 volts.	
			On the TTR linear IF amplifier, adjust the GAIN ADJ control for a 0.7-volt indication.
			Refer to figure 48.
	b. Disconnect the voltmeter.		
4.	Energize the TTR transmitter in the long pulse mode		
	a. On the target track control-power supply, rotate the HV SUPPLY knob to START and depress the HV SUPPLY-ON switch.		
	b. Adjust the HV SUPPLY knob to obtain an indication in the center of the MAGNETRON meter white block.		
5.	Check the gain of the logarithmic IF amplifier.		
	a. Observe the upper sweep of the range indicator.		
		The complete transmitter pulse is present.	
			Perform the procedures in table 4-23, step 4.

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(U) Table 4-10. Monthly Lin-Log Receiver Checks—TTR Continued

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Step	Operation	Normal indication	Corrective procedure
5	Continued		
		The transmitter pulse amplitude is greater than 3/4 inch.	On the TTR logarithmic IF amplifier, adjust the VIDEO GAIN control until no signal amplitude increase is discernible.
			Refer to figure 48.
	b. If the procedures in table 4-23, step 4 were performed, set the TTR RSPU MODE switch to OPR		
6	Check the long and short pulse passband filter switching.		
	a. Observe the upper sweep on the range indicator.	The receiver noise amplitude is between 1/4 and 1/2 inch.	Refer to figure 48
	b. On the range indicator, note the appearance and amplitude of the receiver noise		
	c. Set the TTR PULSE WIDTH switch to SHORT.	The receiver noise amplitude is within 1/8 inch of the amplitude observed in b above.	Refer to figure 48.
		The appearance of the receiver noise changes.	Refer to figure 48.
7.	Check the range delay of the lin-log receiver.		
	a. On the target antenna control group, set the MULTI BIN switch to ZERO		
	b. Set the TTR range to position the range notch under a range zero pulse which is between 1/4 and 1/2 inch in amplitude.		
	c. On the target antenna control group, set the range MAN ACQUIRE AID—TRACK AID—AUTO switch to AUTO	The range zero pulse is centered in the range notch.	On the target side of the signal distribution panel in the radar set group, set the switches on the DL1 delay line to center the range zero pulse in the range notch. If the delay line switch settings were changed, perform the procedures in table 2-8.
8.	Deenergize the transmitter.		
	Rotate the HV SUPPLY knob to START and depress the HV SUPPLY—OFF switch		

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(U) Table 4-10. Monthly Lin-Log Receiver Checks-TTR-Continued

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Step	Operation	Normal indication	Corrective procedure
9.	Reestablish the switch positions.		
a	On the target range indicator control group, set the switches as indicated.		
	Switch	Setting	
	MAN-ACQUIRE AID-	MAN	
	TRACK AID-AUTO		
	AGC-LIN-LOG	AGC	
	MULTI BIN	OFF	
b	On the target track control power supply, set the TTR PULSE WIDTH switch to LONG.		

(U) Table 4-11. Monthly MP Checks-TTR

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Step	Operation	Normal indication	Corrective procedure
1	Energize the TTR through operate in the short pulse mode		
a	Perform the procedures in table 2-5, steps 1 and 2a through f.		
b	On the pulse generator indicator, set the PRE-KNOCK switch to TEST and the NO. 1 RUN-STOP switch to STOP.		
c	On the target track control power supply, set the AGC-MANUAL switch to MANUAL.		
d	From the maximum counterclockwise position, adjust the GAIN knob until the pulses on the target range indicator are approximately 1.2 inch in amplitude.		
	A group of eight pulses appears on the target range indicator.		
	Perform the procedures in table 2-6.		
	Refer to figures 46 and 65.		
e	Center the eighth pulse in the range notch.		
f	Set the range MAN-ACQUIRE AID-TRACK AID-AUTO switch to AUTO. Note and record the range indication. Designate this indication as R.		
g	Lock on each of the other pulses in succession, starting with the seventh and continuing on to the first in descending order.		
	Range of no. 7 pulse +1,476 yds equals R $\pm$ 50 yds.		
	Refer to figure 46.		
	Range of no. 6 pulse +2,623 yds equals R $\pm$ 50 yds.		
	Refer to figure 46.		
	Range of no. 5 pulse +3,443 yds equals R $\pm$ 50 yds.		
	Refer to figure 46.		

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(U) Table 4-11. Monthly MP Checks-TTR-Continued

**CONFIDENTIAL**

Step	Operation	Normal indication	Corrective procedure
1.	Continued		
		Range of no. 4 pulse +3,935 yds equals R $\pm 50$ yds.	Refer to figure 46
		Range of no. 3 pulse +7,869 yds equals R $\pm 50$ yds.	Refer to figure 46
		Range of no. 2 pulse +16,557 yds equals R $\pm 50$ yds.	Refer to figure 46
		Range of no. 1 pulse +25,737 yds equals R $\pm 50$ yds.	Refer to figure 46
h	Set the MAN ACQUIRE AID- TRACK AID- AUTO switch to MAN		
i	On the pulse generator indicator, set the JITTER 1-2-3 switch to 1		
j.	Set the TTR PULSE WIDTH switch to LONG.		
	<i>Note</i> It may be necessary to increase the range to see all three pulses.		
	A group of three pulses appears on the target range indicator		
			Refer to figures 46 and 65.
k	Operate the JITTER 1 2-3 switch to 2 and then to 3.	The last pulse changes position	Refer to figure 46.
l.	Operate the JITTER-1 2-3 switch to JITTER	The last pulse becomes unstable.	Refer to figure 46
m	Set the PRE KNOCK switch to NORM and the NO 1 RUN STOP switch to RUN		
2.	Deenergize the TTR transmitter.		
a	Rotate the HV SUPPLY knob to START and depress the HV SUPPLY OFF switch		
b	Depress the MP switch and observe that the MP OFF indicator illuminates		
c	Set the AGC-MANUAL switch to AGC		

U Table 4-11. Monthly Presentation Checks-MTR

**UNCLASSIFIED**

Step	Operation	Normal indication	Corrective procedure
	Perform the procedures in table 2-12		

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Table 4-13 Monthly Transmitter Checks-MTR

**UNCLASSIFIED**

Step	Procedure	Normal indication	Corrective procedure
1	Energize the MTR through low voltage. Perform the procedures in table 2-1.		
2	Remove transmitter sync. On the right side of the MTR coder, disconnect P6 from J2.		
3	Apply high voltage to the MTR. On the missile track control power supply, rotate the HV SUPPLY knob to START and depress the HV SUPPLY-ON switch. The HV SUPPLY-READY indicator light extinguishes, and the HV SUPPLY-ON indicator light illuminates. Refer to figure 32. On the radar power control indicator, the MISSILE-HIGH VOLTS-PREHEAT, HOT, and READY and the MISSILE INTLK indicator lights extinguish. The MISSILE-HIGH VOLTS-ON indicator light illuminates. Refer to figure 32.		
*4.	Check operation of the magnetron arc suppressor. a. On the MTR antenna support base, set the ANTENNA switch to DISABLE and the BLOWER switch to OFF. b. On the missile track RF control power supply, connect a voltmeter between terminal 32 and ground. The voltmeter indication is between +145 and +155 volts. Refer to figure 27. c. Disconnect the voltmeter. d. Disconnect the lead from the magnetron arc suppressor. e. Momentarily short the center conductor on the arc suppressor lead to ground. To obtain a ground, the arc suppressor lead can be placed on the element pin located above the upper right-winging thumbnut used to secure the missile track RF control power supply. On the radar power control indicator, the MISSILE-HIGH VOLTS-ON indicator momentarily extinguishes. Refer to figure 16. f. Reconnect the lead disconnected in d above. g. Set the BLOWER switch to ON and the ANTENNA switch to NORMAL.		
5	Check the high voltage circuits. a. Operate the MAGNETRON switch to KVS=20. b. Adjust the HV SUPPLY knob until an indication of 16 kv is noted on the MAGNETRON meter.		

<sup>1</sup> Omit this step if the checks in the preceding tables have been performed in sequence.

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(U) Table 4 12. Monthly Transmitter Checks-MTR-Continued

**UNCLASSIFIED**

Step	Operation	Normal indication	Corrective procedure
5.	Continued		
	<i>Caution</i> When performing c below, insure that the high voltage power supply current as indicated by the MAGNETRON meter, does not exceed 5 ma.		
	c While monitoring both voltage and current by setting the MAGNETRON switch alternately to KV FS=20 and MA FS=100, slowly adjust the HV SUPPLY knob to obtain an indication of 20 kv or 5 ma, whichever occurs first.		

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(U) Table 4-12. Monthly Transmitter Checks—MTR—Continued

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Step	Operation	Normal indication	Corrective procedure
5.	Continued	<p>A voltage of 20 kv can be obtained with a current of 5 ma or less.</p> <p><b>Warning</b> Voltages DANGEROUS TO LIFE exist in the missile track receiver-transmitter. Before performing maintenance on the unit, deenergize the system and discharge all capacitors using the shorting bar.</p> <p><i>*Note.</i> If excessive current is noted, the -500-volt (bias) power supply and pulse amplifier V1 should be suspected. The bias voltage can be measured in the low voltage condition. Repeating step 5 with the leads to V1 disconnected can isolate V1.</p> <p>Refer to figure 16.</p> <p>The current indication remains steady.</p> <p>Refer to figure 16.</p>	
6.	Deenergize the transmitter and restore normal connections.		
	a. Rotate the HV SUPPLY knob to START and depress the HV SUPPLY—OFF switch		
	b. On the coder, reconnect P6 to J2		
7.	Perform the weekly MTR transmitter check procedures in table 3-9		

(U) Table 4-13. Monthly Transmitter Frequency Setting Capability Checks—MTR

## CONFIDENTIAL

Step	Operation	Normal indication	Corrective procedure
1.	Prepare the MTR for the check.		
	Perform the procedures in table 2-1. <sup>1</sup>		
2.	Prepare the radar test set for the check.		
	a. Verify that the AC POWER switch is set to ON.		
	b. Set the FUNCTION switch to LOCAL		
	c. Set the METER switch to 0 dBm FULL SCALE RF LEVEL		
3.	Energize the MTR through operate.		
	Perform the procedures in table 2-13, steps 1, 2, and 4		
4.	Check the MTR transmitter frequency.		
	<p><i>Note.</i> This procedure is necessary only when the missile bandpass filters are used in the missile or when the MTR has an assigned operating frequency. The nominal center frequency of the missile bandpass filters and the tuned cavity in the MTR must be the same.</p>		

<sup>1</sup> Omit this step if the checks in the preceding tables have been performed in sequence.

**CONFIDENTIAL***(C, Table 4 13 Monthly Transmitter Frequency Setting Capability Checks—MTR—Continued)***CONFIDENTIAL**

Step	Operation	Normal indication	Corrective procedure																					
4.	Continued																							
a.	On the missile control-indicator group, rotate the azimuth and elevation handwheels to position the MTR antenna to the coordinates of the radar test set.																							
		The RF POWER dB meter indicates between 0 and 5.																						
			Slowly rotate the azimuth handwheel until an indication between 0 and 5 is obtained. Maintain this position until frequency measurement is completed.																					
b.	Adjust the MEAS FREQ control on the radar test set to obtain a dip in the RF POWER dB meter indication (A dip of 0.5 db or greater is normal)																							
c.	Record the setting of the MEAS-FREQ meter.																							
		The frequency indication is within 15 MHz of the assigned frequency.																						
			Perform the procedures in table 6-15																					
			Refer to figures 92 and 93																					
		<i>Note.</i> The operating (assigned) frequency is the nominal center frequency of the antenna horn filters in use in the missile receiving antennas, as specified below																						
		<table><tr><th>Antenna horn ord no.</th><th>Code</th><th>Nominal center frequency (MHz)</th></tr><tr><td>8520831</td><td>L1</td><td>9550</td></tr><tr><td>8520832</td><td>L2</td><td>9300</td></tr><tr><td>8520833</td><td>L3</td><td>9060</td></tr><tr><td>8520834</td><td>L4</td><td>8800</td></tr><tr><td>8520835</td><td>L5</td><td>8550</td></tr><tr><td>8520836</td><td>L6</td><td>None</td></tr></table>	Antenna horn ord no.	Code	Nominal center frequency (MHz)	8520831	L1	9550	8520832	L2	9300	8520833	L3	9060	8520834	L4	8800	8520835	L5	8550	8520836	L6	None	
Antenna horn ord no.	Code	Nominal center frequency (MHz)																						
8520831	L1	9550																						
8520832	L2	9300																						
8520833	L3	9060																						
8520834	L4	8800																						
8520835	L5	8550																						
8520836	L6	None																						
5.	Condition the radar test set for remote operation.																							
a.	Set the FUNCTION switch to RMT.																							
b.	Rotate the MEAS FREQ knob fully cw.																							
6.	Deenergize the MTR transmitter																							
	On the missile track control power supply, rotate the HV SUPPLY knob to START and depress the HV SUPPLY -OFF switch.																							

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(U), Table 4-14. Monthly Target AFC Checks- MTR

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Step	Procedure	Normal indication	Corrective procedure
1.	Prepare for the target AFC checks.		
a	Perform the procedures in table 2-1		
b	On the missile track control drawer, set the switches as indicated		
	Switch	Setting	
	TEST	TEST	
	DISABLE	down	
	RANGE	ZERO	
c	On the missile error voltage monitor verify that the RCVR TEST switch is not set to XTAL and the BEACON-TARGET switch is set to TARGET		
d	On the missile track control-power supply, set the TUNE SLEW switch to SLEW		
2.	Energize the MTR transmitter		
	On the missile track control-power supply, rotate the HV SUPPLY knob to START and depress the HV SUPPLY ON switch. Adjust the HV SUPPLY knob to obtain an indication of 3 ma on the MAGNETRON meter		
3.	Check the crystal current and local oscillator (VTO) output at the converter		
a	On the missile track antenna support base set the ANTENNA switch to DISABLE		
b	Set the BLOWER switch to OFF		
c	On the missile track RF control-power supply set the FREQUENCY DECREASE INCREASE switch to DECREASE. Operate and hold the FREQUENCY TUNE switch until the magnetron tuning drive stops.		
	The LO mark on the magnetron tuning drive dial coincides with the index mark on the tuning drive housing.		
			(1) Remove the flexible cable from the tuning drive
			(2) Manually tune the magnetron until the magnetron frequency dial reaches the low frequency stop.
			(3) Using the FREQUENCY-DECREASE-INCREASE switch and the FREQUENCY-TUNE switch, tune the magnetron tuning drive until the LO mark on the tuning drive dial coincides with the index mark
			(4) Replace the flexible cable to the tuning drive

<sup>1</sup> Omit this step if the checks in the preceding tables have been performed in sequence

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(U) Table 4-14 Monthly Target AFC Checks--MTR--Continued

**UNCLASSIFIED**

Step	Description	Normal indication	Corrective procedure
3.	<b>Continued</b>		
d	At the missile track receiver-transmitter, set the crystal current switch on the track amplifier-converter to each position from CR1 through CR8.	The XTAL CUR meter indicates a steady value between 0.8 and 2 $\mu$ a for each position.	Adjust variable attenuator AT7 and repeat d above.
		The AFC LOCK indicator on the target AFC is illuminated and steady.	Perform the procedures in table 5-1.
e	On the target AFC, remove the coaxial cable from J3-IF IN.	The AFC LOCK indicator extinguishes.	Refer to figure 22.
f	Reconnect the coaxial cable to J3-IF IN.	The AFC LOCK indicator is illuminated and steady.	Perform the procedures in table 5-1.
g	Set the crystal current switch to the position that exhibits the lowest crystal current.		
h	Set the FREQUENCY DECREASE INCREASE switch to INCREASE.		
i	Operate and hold the FREQUENCY TUNE switch until the magnetron tuning drive stops.	The XTAL CUR meter indicates a steady value between 0.8 and 2 $\mu$ a.	Reset variable attenuator AT7.
		The AFC LOCK indicator is illuminated and steady as the magnetron frequency is varied.	Perform the procedures in table 5-1.
j	If variable attenuator AT7 was adjusted, repeat step 3.		
k	Set the crystal current switch to OFF.		
l	Set the BLOWER switch to ON.		
m	Set the ANTENNA switch to NORMAL.		
4	Establish operating frequency of the transmitter to frequency of the assigned cavity.		
a	Perform the procedures in table 2-13, step 4.		
b	On the missile error voltage monitor, set the BEACON--TARGET switch to TARGET.		
c	On the missile track control power supply, adjust the HV SUPPLY knob to obtain an indication of 3 ma on the MAGNETRON meter.		
5	Perform the daily target AFC check procedures in table 2-14, steps 3 through 5.		

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(U; Table 4-15. Monthly Beacon AFC Checks—MTR)

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Step	Operation	Normal indication	Corrective procedure												
	<p><i>Note</i> To minimize RF interference insure that the MTR and TTR antennas are not simultaneously aimed at the radar test set mast or other common object.</p>														
1.	Prepare for the beacon AFC checks.														
	a.	Perform the procedures in table 2-1. <sup>1</sup>													
	b.	On the missile track control drawer, set the switches as indicated													
		<table border="0"> <tr> <td><i>Switch</i></td><td><i>Setting</i></td></tr> <tr> <td>TEST</td><td>TEST</td></tr> <tr> <td>DISABLE</td><td>down</td></tr> </table>	<i>Switch</i>	<i>Setting</i>	TEST	TEST	DISABLE	down							
<i>Switch</i>	<i>Setting</i>														
TEST	TEST														
DISABLE	down														
	c.	On the missile control-indicator group, set the switches as indicated													
		<table border="0"> <tr> <td><i>Switch</i></td><td><i>Setting</i></td></tr> <tr> <td>TARGET-STANDBY-MISSILE</td><td>STANDBY</td></tr> <tr> <td>SIGNAL LEVEL</td><td>00</td></tr> <tr> <td>FREQ SELECT</td><td>LOCAL</td></tr> <tr> <td>MODE</td><td>CW</td></tr> </table>	<i>Switch</i>	<i>Setting</i>	TARGET-STANDBY-MISSILE	STANDBY	SIGNAL LEVEL	00	FREQ SELECT	LOCAL	MODE	CW			
<i>Switch</i>	<i>Setting</i>														
TARGET-STANDBY-MISSILE	STANDBY														
SIGNAL LEVEL	00														
FREQ SELECT	LOCAL														
MODE	CW														
		Adjust the FREQUENCY control dial to 500.													
	d.	On the missile track control-power supply, set the AGC MANUAL switch to AGC													
	e.	On the missile error voltage monitor, set the switches as indicated													
		<table border="0"> <tr> <td><i>Switch</i></td><td><i>Setting</i></td></tr> <tr> <td>(IF TEST)-ADJ</td><td>ADJ</td></tr> <tr> <td>RCVR TEST</td><td>BIAS</td></tr> <tr> <td>BEACON-TARGET</td><td>BEACON</td></tr> <tr> <td>PRESET</td><td>2</td></tr> </table>	<i>Switch</i>	<i>Setting</i>	(IF TEST)-ADJ	ADJ	RCVR TEST	BIAS	BEACON-TARGET	BEACON	PRESET	2			
<i>Switch</i>	<i>Setting</i>														
(IF TEST)-ADJ	ADJ														
RCVR TEST	BIAS														
BEACON-TARGET	BEACON														
PRESET	2														
	f.	Momentarily operate the SWEEP PRESET switch.													
		The SWP CENTER indicator is illuminated.													
		Refer to figure 23.													
	g.	On the missile IF test generator, set the switches as indicated.													
		<table border="0"> <tr> <td><i>Switch</i></td><td><i>Setting</i></td></tr> <tr> <td>OSC</td><td>ON</td></tr> <tr> <td>MODE</td><td>CW</td></tr> <tr> <td>PULSE WIDTH</td><td>SHORT</td></tr> <tr> <td>0-90 dB ATTENUATOR</td><td>30</td></tr> <tr> <td>0-9 dB ATTENUATOR</td><td>0</td></tr> </table>	<i>Switch</i>	<i>Setting</i>	OSC	ON	MODE	CW	PULSE WIDTH	SHORT	0-90 dB ATTENUATOR	30	0-9 dB ATTENUATOR	0	
<i>Switch</i>	<i>Setting</i>														
OSC	ON														
MODE	CW														
PULSE WIDTH	SHORT														
0-90 dB ATTENUATOR	30														
0-9 dB ATTENUATOR	0														
2.	Set the frequency of the IF test generator to 60 MHz.														
	a.	On the target error voltage monitor, set the (IF TEST) ADJ switch to ADJ and the RCVR TEST switch to BIAS.													

<sup>1</sup>Omit this step if the checks in the preceding tables have been performed in sequence.

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(U) Table 4-16 Monthly Beacon AFC Checks—MTR—Continued

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Step	Operation	Normal indication	Corrective procedure
2.	Continued		
	b	On the target track control, power supply, set the AGC MANUAL switch to AGC and the TTR PULSE WIDTH switch to LONG	
	c	On the target IF test generator, disconnect P128 from J4-ATT OUT	
	d	On the missile IF test generator, disconnect P1 from J4 ATT OUT	
	e	Connect a coaxial cable from J4-ATT OUT on the missile IF test generator to P128 removed in c above	
	f	With the missile IF test generator COARSE IF FREQ ADJUST control set to 0, adjust the FINE IF FREQ ADJUST control to obtain a maximum indication on the target error voltage monitor RCVR TEST meter.	
	g.	Remove the coaxial cable added in e above. Reconnect P128 to J4-ATT OUT on the target IF test generator and P1 to J4-ATT OUT on the missile IF test generator.	
3.	Check the discriminator cross-over frequency.		
	a	On the missile error voltage monitor, set the RCVR TEST switch to AFC	
		The RCVR TEST meter indicates between 40 and 60.	
			(1) On the missile beacon AFC, adjust the FREQ TRIM control.
			(2) Perform the procedures in table 5-2.
	b	On the missile IF test generator, set the OSC switch to OFF	
4.	Check the discriminator output due to receiver noise.		
		On the missile error voltage monitor, verify that the RCVR TEST switch is set to AFC	
		Note. The meter indication should be observed for at least 15 seconds.	
		The RCVR TEST meter average indication is approximately 50.	
			(1) On the missile beacon AFC, adjust the NOISE BAL control.
			(2) Perform the procedures in table 5-2.
5.	Check the discriminator output slope.		
	a.	On the missile IF test generator, set the OSC switch to ON	
		The RCVR TEST meter indicates 50.	
			On the missile IF test generator, adjust the FINE IF FREQ ADJUST control.
	b.	Set the COARSE IF FREQ ADJUST control to +1.	
		The RCVR TEST meter indicates between 65 and 80.	
			Perform the procedures in table 5-2.
	c.	Note the indication on the RCVR TEST meter.	
	d.	Set the COARSE IF FREQ ADJUST control to -1.	

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(U), Table 4-15. Monthly Beacon AFC Check—MTR (Continued)

**UNCLASSIFIED**

Step	Operation	Normal indication	Corrective procedure
5.	<b>Continued</b>		
e	Subtract the indication noted in e above from 100		
	The RCVR TEST meter indicates within 10 of the computed number		
	Perform the procedures in table 5-2		
f.	On the missile IF test generator, set the switches as indicated		
	Switch	Setting	
	OSC	OFF	
	0-90 dB ATTENUATOR	90	
	Set the COARSE IF FREQ ADJUST control to 0		
6.	<b>Check the beacon AFC loop gain</b>		
a	On the missile error voltage monitor, set the RCVR TEST switch to BIAS.		
b	Acquire the radar test set in the CW mode using the procedures in table 2-15, step 2a through e and step 2i through h. Instead of the PRESET 1 COARSE and FINE controls, use the PRESET 2 control		
c	While observing the missile error voltage monitor RCVR TEST meter, adjust the FREQUENCY control on the missile control indicator group to obtain an indication of 80		
	The FREQUENCY control dial indicates between 260 and 420.		
	Perform the procedures in table 5-2		
d	Adjust the FREQUENCY control to obtain an indication of 20 on the RCVR TEST meter		
	The FREQUENCY control dial indicates between 580 and 740		
	Perform the procedures in table 5-2.		
7	<b>Perform the daily beacon AFC check procedures in table 2-15</b>		

(U), Table 4-15.1 Monthly Range System Checks—MTR

**UNCLASSIFIED**

Step	Operation	Normal indication	Corrective procedure
	Perform the procedures in table 2-16		

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IL, Table 4-16. Monthly Monopulse Receiver Checks-MTR

UNCLASSIFIED

Step	Operation	Normal indication	Corrective procedure												
	<p><i>Note:</i> To minimize RF interference, ensure that the MTR and TTR antennas are not simultaneously aimed at the radar test set mast or other common object.</p>														
1	Prepare for the monopulse receiver checks.														
	a.	Perform the procedures in table 2-1 <sup>1</sup> .													
	b.	On the missile track control drawer, set the switches as indicated.													
		<table> <tr> <th>Switch</th><th>Setting</th></tr> <tr> <td>TEST</td><td>TEST</td></tr> <tr> <td>DISABLE</td><td>down</td></tr> <tr> <td>RANGE</td><td>NORMAL</td></tr> </table>	Switch	Setting	TEST	TEST	DISABLE	down	RANGE	NORMAL					
Switch	Setting														
TEST	TEST														
DISABLE	down														
RANGE	NORMAL														
	c.	On the missile control indicator group, set the switches as indicated.													
		<table> <tr> <th>Switch</th><th>Setting</th></tr> <tr> <td>SIGNAL LEVEL</td><td>00</td></tr> <tr> <td>FREQ SELECT</td><td>REMOTE</td></tr> <tr> <td>MODE</td><td>PULSE</td></tr> <tr> <td>PULSES</td><td>SINGLE</td></tr> <tr> <td>TARGET-STANDBY-MISSILE</td><td>STANDBY</td></tr> </table>	Switch	Setting	SIGNAL LEVEL	00	FREQ SELECT	REMOTE	MODE	PULSE	PULSES	SINGLE	TARGET-STANDBY-MISSILE	STANDBY	
Switch	Setting														
SIGNAL LEVEL	00														
FREQ SELECT	REMOTE														
MODE	PULSE														
PULSES	SINGLE														
TARGET-STANDBY-MISSILE	STANDBY														
	d.	On the missile track control-power supply, verify that the AGC-MANUAL switch is set to AGC.													
	e.	On the missile error voltage monitor, set the switches as indicated.													
		<table> <tr> <th>Switch</th><th>Setting</th></tr> <tr> <td>(IF TEST)-ADJ</td><td>ADJ</td></tr> <tr> <td>RCVR TEST</td><td>BIAS</td></tr> <tr> <td>BEACON TARGET</td><td>BEACON</td></tr> <tr> <td>PRESET</td><td>1</td></tr> <tr> <td>VID MON</td><td>SUM</td></tr> </table>	Switch	Setting	(IF TEST)-ADJ	ADJ	RCVR TEST	BIAS	BEACON TARGET	BEACON	PRESET	1	VID MON	SUM	
Switch	Setting														
(IF TEST)-ADJ	ADJ														
RCVR TEST	BIAS														
BEACON TARGET	BEACON														
PRESET	1														
VID MON	SUM														
	f.	On the missile error voltage monitor, momentarily operate the SWEEP PRESET switch.													
		The SWP CENTER indicator is illuminated.													
		Refer to figure 23.													
	g.	On the IF test generator, verify that the OSC switch is set to OFF.													
		<p><i>Note:</i> For the remainder of this table, all switches and meters are located on the missile error voltage monitor unless otherwise indicated.</p>													
2	Check the gain setting of the sum main IF amplifier.														
	Observe the RCVR TEST meter.														

<sup>1</sup> Omit this step if the checks in the preceding tables have been performed in sequence.**CONFIDENTIAL**

(H) Table 4-18 Monthly Monopulse Receiver Checks-MTR Continued

## UNCLASSIFIED

Step	Operation	Normal indication	Corrective procedure
2.	Continued	The average AGC bias indication is between 0 and 10	(1) On the missile sum main IF amplifier, adjust the GAIN ADJ control to obtain an average indication of 5 on the meter (2) Perform the procedures in table 5-3
3.	Check the AGC level setting.		
a	On the IF test generator, set the switches as indicated		
	Switch	Setting	
	OSC	ON	
	MODE	CW	
	SLEW RATE	OFF	
	0-90 dB ATTENUATOR	30	
	0-9 dB ATTENUATOR	0	
	PULSE WIDTH	SHORT	
b	On the IF test generator, adjust the COARSE and FINE IF FREQ ADJUST controls for maximum indication on the RCVR TEST meter		
c	Set the (IF TEST)-ADJ switch to (IF TEST) and the RCVR TEST switch to (SUM). The RCVR TEST meter indicates between 45 and 55		On the missile IF distribution and AGC control, adjust the AGC ADJ control to obtain an indication of 50 on the meter
4.	Check the AGC response.		
a	On the IF test generator, vary the 0-90 dB ATTENUATOR switch in 10-db steps from 0 to 50 dB The RCVR TEST meter indicates between 45 and 55. Refer to figure 17		
b	Vary the 0-90 dB ATTENUATOR switch in 10-db steps from 50 to 90 dB The RCVR TEST meter average indication is between 40 and 60 Refer to figure 17		
5.	Check the sum video gain.		
a	On the IF test generator, set the 0-90 dB ATTENUATOR switch to 0 dB. Set the MODE switch to PULSE. Momentarily depress the RANGE PRE SET switch		
b	Set the MTR range to place the IF test pulse adjacent to the range notch. Note the signal amplitude on the range indicator		

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(U) Table 4-15. Monthly Monopulse Receiver Checks-MTR-Continued

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Step	Operation	Normal indication	Corrective procedure
5	Continued		
c	On the IF test generator, use the RANGE TRIM control to center the test pulse in the range notch to obtain minimum pulse amplitude	The signal amplitude relative to the sweep baseline is between one-third and one half of the amplitude noted in b above	Perform the procedures in table 5-3, step 5
d	On the IF test generator, set the MODE switch to CW		
6	Check the gain variation between the IF amplifiers.		
	<i>Note.</i> Normally, gain variations are due to compensations made for gain variations in the receiver RF and IF signal paths in table 5-3		
a	On the IF test generator, set the 0-90 dB ATTENUATOR switch to 30 dB		
b	Set the RCVR TEST switch to (AZ)	The RCVR TEST meter indicates between 30 and 80.	Perform the procedures in table 5-3, step 7
c	Set the RCVR TEST switch to (EL)	The RCVR TEST meter indicates between 30 and 80.	Perform the procedures in table 5-3, step 7.
d	On the IF test generator, set the OSC switch to OFF		
e	Set the RCVR TEST switch to BIAS and the (IF TEST) ADJ switch to ADJ		
7	Check the RECEIVED SIGNAL meter		
a	Hold the REMOTE-LOCAL switch in the LOCAL position and adjust the MAN GAIN control to obtain an indication of 10 on the RCVR TEST meter	The missile RECEIVED SIGNAL meter on the missile tracking console indicates between 0.5 and 1.5.	Refer to figure 17
	<i>Note.</i> Each major meter division equals approximately 10 db		
b	Adjust the MAN GAIN control to obtain 80 on the RCVR TEST meter	The missile RECEIVED SIGNAL meter on the missile tracking console indicates between 7.5 and 9.5.	Refer to figure 17
c	Release the REMOTE-LOCAL switch		
8.	Check the sum, azimuth, and elevation channel receiver sensitivity		
	Perform the procedures in table 2-15, step 2 and table 2-17, steps 4b through 9		

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(U) Table 4-16. Monthly Monopulse Receiver Checks—MTR—Continued

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Step	Operation	Normal indication	Corrective procedure
8.	Continued	<p>The sum SIGNAL LEVEL switch indication obtained in table 2-17, step 6c does not exceed the last computed MTR receiver sensitivity figure by more than 5 db</p> <p>Perform the procedures in table 5-16 to obtain a new computed MTR receiver sensitivity figure</p>	

(U) Table 4-16.1 Monthly ATC Checks—MTR

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Step	Operation	Normal indication	Corrective procedure
	Perform the procedures in table 2-18		

(U) Table 4-16.2. Monthly AGC Monitor Checks—MTR

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Step	Operation	Normal indication	Corrective procedure
*	Perform the procedures in table 2-19 3-41 1		

(U) Table 4-17. Monthly Tracking Servo Checks—MTR

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Step	Operation	Normal indication	Corrective procedure
1.	<p>Prepare the MTR for the check.</p> <ol style="list-style-type: none"> <li>Perform the procedures in table 3-11. If the checks in the preceding tables have been performed in sequence, omit step 2 of table 3-11.</li> <li>On the missile track control drawer, set the DISABLE switch to the down position.</li> <li>On the missile track control-power supply, set the AGC-MANUAL switch to MANUAL. Adjust the GAIN knob until the COAST indicator light on the control drawer extinguishes.</li> </ol>		

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(U) Table 4-17 Monthly Tracking Servo Checks-MTR-Continued

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Step	Operation	Normal indication	Corrective procedure
1.	Continued		
	<i>Note.</i> In the following steps where stationary displays are required the alternating 1 100 digit can be disregarded.		
2.	Perform the range servo balance check.		
	a.	On the missile track control drawer, set the range MAN-AID-AUTO switch to MAN.	
	b.	Observe the range displays on the missile range indicator.	
		The range displays are stationary.	On the range handwheel drive control, adjust the BAL variable resistor. Refer to figure 20.
3.	Perform the range handwheel calibration.		
	a.	Set the MTR range to 20,000 yards.	
	b.	Turn the range handwheel clockwise ten turns.	
		The MTR range indication is between 21,450 and 22,050 yards.	Perform the procedures in table 6-7, step 4d.
4.	Perform the azimuth servo balance checks.		
	a.	On the missile track control drawer, set the azimuth MAN-AID-AUTO switch to MAN.	
		The azimuth displays are stationary.	On the azimuth handwheel drive control, adjust the BAL variable resistor. Refer to figure 18
	<i>Note.</i> Do not move the azimuth handwheel in b and c below.		
	b.	Set the azimuth MAN-AID-AUTO switch to AID.	
		The azimuth displays are stationary.	On the azimuth handwheel drive control, adjust the R3 variable resistor mounting bracket.
	c.	Set the azimuth MAN-AID-AUTO switch to MAN, then to AID and back to MAN.	
		The azimuth displays remain stationary.	Repeat the procedures in step 4.
5.	Perform the elevation servo balance checks.		
	<i>Note.</i> Verify that the MTR antenna elevation is between 0 and 3,200 mils.		
	a.	On the missile track control drawer, set the elevation MAN-AID-AUTO switch to MAN.	

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(U) Table 4-17. Monthly Tracking Servo Checks—MTR—Continued

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Step	Operation	Normal indication	Corrective procedure
5.	Continued		
		The elevation displays are stationary.	On the elevation handwheel drive control, adjust the BAL variable resistor. Refer to figure 19.
	<i>Note.</i> Do not move the elevation handwheel in b and c below		
b.	Set the elevation MAN—AID—AUTO switch to AID.	The elevation displays are stationary.	On the elevation handwheel drive control, adjust the R3 variable resistor mounting bracket.
c.	Set the elevation MAN—AID—AUTO switch to MAN, then to AID and back to MAN.	The elevation displays remain stationary	Repeat the procedures in a through c above
6.	Perform the range servo aided rate check.		
a.	Set the MTR range to approximately 100,000 yards.		
b.	Set the MTR RSPU COORD SELECT switch to D-RATE.		
c.	Set the range MAN—AID—AUTO switch to AID.		
d.	Rotate the range handwheel four and one-half turns counterclockwise	The MTR RSPU COORD DISPLAY indicates between 1,656 and -2,328 yards/second. Note the indication.	(1) Set the range MAN—AID—AUTO switch to MAN. Set the MTR RSPU COORD SELECT switch to D-FCN. Perform the procedures in table 4-7, step 4d (2) Repeat the procedures in a through d above.
e.	Set the range MAN—AID—AUTO switch to MAN		
7.	Perform the azimuth servo rate checks.		
a.	Position the MTR antenna elevation to 0 mils.		
b.	Set the MTR range to 1,500 yards.		
c.	On the MTR RSPU, set the COORD SELECT switch to Y-RATE		
d.	Set the azimuth MAN—AID—AUTO switch to AID		
e.	Rotate the azimuth handwheel six turns clockwise or counterclockwise		

(U) Table 4-17 Monthly Tracking Servo Checks—MTR—Continued

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Step	Operation	Normal indication	Corrective procedure
7.	Continued		
		The indication on the MTR RSPU COORD DISPLAY varies. The maximum negative and maximum positive indications are both between 600 and 648 yards/second.	On the azimuth coupling resistor assembly, adjust the AZIMUTH-AID variable resistor. Refer to figure 18.
f	On the missile track control drawer, set the SERVOS switch to INC and the azimuth MAN-AID-AUTO switch to AUTO. Wait approximately 30 seconds until the antenna rate becomes steady.	The indication on the MTR RSPU COORD varies. The maximum negative and maximum positive indications are both between 984 and 1,080 yards/second.	On the azimuth coupling resistor assembly, adjust the AZIMUTH-AUTO variable resistor. After each adjustment, allow the antenna rate to become steady. Refer to figure 18.
g	Set the azimuth MAN-AID-AUTO switch to MAN and the SERVOS switch to NORMAL		
8.	Perform the elevation servo rate checks.		
a.	Verify that the MTR range is set to 1,500 yards.		
b.	Rotate the azimuth handwheel to position the MTR antenna azimuth to 0 mils		
c.	Rotate the elevation handwheel to position the MTR antenna elevation to 0 mils		
d.	On the missile elevation coupling resistor assembly, depress and hold the ELEVATION PRE AMP BAL switch.		
e.	Set the elevation MAN-AID-AUTO switch to AID, and rotate the elevation handwheel six turns clockwise.		
	<b>Caution</b> Set the elevation MAN-AID-AUTO switch to MAN before the MTR antenna reaches 3,200 mils.		
f	While carefully observing the MTR RSPU COORD DISPLAY, release the ELEVATION PRE AMP BAL switch.	The first maximum MTR RSPU COORD DISPLAY indication is between -600 and -648 yards/second. The maximum indication occurs at 1,600 mils elevation.	On the elevation coupling resistor assembly, adjust the ELEVATION-AID variable resistor. Set the elevation MAN-AID-AUTO switch to MAN and repeat c through f above. Refer to figure 19.

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(U), Table 4-17. Monthly Tracking Servo Checks—MTR—Continued

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Step	Operation	Normal indication	Corrective procedure
8.	<b>Continued</b>		
	g. Set the elevation MAN-AID-AUTO switch to MAN		
	h. Rotate the elevation handwheel to position the MTR antenna elevation to 0 mils		
	i. Depress and hold the ELEVATION PRE AMP BAL switch.		
	j. Set the elevation MAN-AID-AUTO switch to AUTO and the SERVOS switch to INC		
	<i>Caution</i> Set the elevation MAN-AID-AUTO switch to MAN before the MTR antenna reaches 3,200 mils.		
	k. After approximately 30 seconds and while carefully observing the MTR RSPU COORD DISPLAY, release the ELEVATION PRE AMP BAL switch.		
	The first maximum MTR RSPU COORD DISPLAY indication is between -984 and -1,080		
	On the elevation coupling resistor assembly, adjust the ELEVATION-AUTO variable resistor. Set the elevation MAN-AID-AUTO switch to MAN and repeat <i>h</i> through <i>k</i> above.		
	Refer to figure 19		
	l. Set the elevation MAN-AID-AUTO switch to MAN and the SERVOS switch to NORMAL		
	m. Set the MTR RSPU COORD SELECT switch to D-FCN		
	n. Set the AGC-MANUAL switch to AGC		

(U), Table 4-18. Monthly Radar Coder Checks—MTR

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Step	Operation	Normal indication	Corrective procedure
1.	Perform the procedures in table 2-20, steps 1, 2, 3, 4f, 5, and 6, and table 3-12, steps 2 through 4.		
2.	Prepare the computer for the radar coder checks.		
	a. Have the computer operator perform the procedures in <i>b</i> and <i>c</i> below upon request		
	b. From the computer CODER TEST menu, select PCH and depress CR		
	<i>Note</i> To obtain the CODER TEST menu, it may be necessary to depress CTL and Z simultaneously		
	CODER TEST 11 is displayed on the computer display.		
	Refer to figure 36		

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(U) Table 4-18 Monthly Radar Coder Checks—MTR (Continued)

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Step	Action	Normal indication	Corrective procedure
2	Continued		
	a. Depress CTL and C simultaneously to obtain CODER TEST 12	On the coder control panel, the PITCH and YAW ZERO indicators are illuminated.	
3.	Prepare the MTR for the radar coder checks.		
	a On the coder control panel, set the BATTERY CODE switch to 4 and the SELECT switch to PITCH		
	b On the missile track control drawer, set the TEST switch to TEST		
	Note: Have the computer operator perform the procedures in the appropriate steps by telephone request.		
4.	Check the pitch orders received from the computer as generated by the coder		
	a Set the MTR range to center the number two pulse in the range notch		
	b On the missile track control drawer, set the range MAN-AID-AUTO switch to AUTO		
	c On the MTR RSPU, set the COORD SELECT switch to D-FCN		
	d Record the setting of the MTR RSPU BEACON DELAY switches		
	e Adjust the BEACON DELAY switches and momentarily depress the ENTER switch until the COORD DISPLAY indicates 0 yards		
	f Set the range MAN-AID-AUTO switch to MAN.		
	g Set the MTR range to center the number four pulse in the range notch. Set the range MAN-AID-AUTO switch to AUTO.		
		Only one pulse appears in the range notch.	
			Refer to figure 36
		The COORD DISPLAY indicates between 14,314 and 14,371 yards.	
			Refer to figure 36
	h Set the range MAN-AID-AUTO switch to MAN		
	i On the keyboard display, select CODER TEST 13 by depressing CTL and C simultaneously		
		On the range indicator, the pulse moves to the right and remains within the sweep expansion pulse.	
			Refer to figure 36
		On the coder control panel, the PITCH ZERO indicator is not illuminated	
			Refer to figure 36
	j By depressing CTL and C simultaneously, sequentially step the computer CODER TEST from 14 to 21		
		For each CODER TEST step, the number four pitch pulse moves to the right (out in range).	
			Perform the procedures in table 5-20

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IL 3 Table 4-1B Monthly Radar Coder Checks-MTR-Continued

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Step	Operation	Expected Results
4	Continued	
k	Set the MTR range to center the number four pitch pulse in the range notch (pulse farthest out in range)	
l	Set the range MAN-AID-AUTO switch to AUTO	<p>The COORD DISPLAY indicates between 20,051 and 20,111 yards</p> <p>Refer to figure 36</p> <p>On the coder control panel, the PITCH +MAX indicator is illuminated</p> <p>Refer to figure 36</p>
m	Set the range MAN-AID-AUTO switch to MAN	
n	Depress the CTL and C keys simultaneously to obtain CODER TEST 22	<p>The number four pitch pulse slightly decreases in range.</p> <p>Refer to figure 36</p> <p>On the coder control indicator, the PITCH +MAX indicator is extinguished</p> <p>Refer to figure 36</p>
o	Depress CTL and C simultaneously to obtain CODER TEST 23	
p	Set the MTR range to 14,344 yards	<p>One single pulse appears in the sweep expansion pulse.</p> <p>Refer to figure 36</p>
q	By depressing CTL and C simultaneously, sequentially step the computer CODER TEST from 24 to 32.	<p>For each CODER TEST step, the number four pitch pulse moves to the left (decreasing range).</p> <p>Refer to figure 36</p>
r	Set the MTR range to 8,606 yards	<p>A single pulse appears in the sweep expansion pulse.</p> <p>Refer to figure 36</p> <p>On the coder control panel, the PITCH -MAX indicator is illuminated</p> <p>Refer to figure 36</p>
s	Set the MTR range to center the pulse in the range notch, and set the range MAN-AID-AUTO switch to AUTO	<p>The COORD DISPLAY indicates between 8,576 to 8,636 yards</p> <p>Refer to figure 36</p>
t	Set the range MAN-AID-AUTO switch to MAN.	
u	Depress CTL and C simultaneously to obtain CODER TEST 33	<p>On the coder control panel, the PITCH -MAX indicator is not illuminated</p> <p>Refer to figure 36</p>

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(U) Table 4-18. Monthly Radar Coder Checks-MTR-Continued

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Step	Operation	Normal indication	Corrective procedure
4	Continued		
a	Depress CTL and Z simultaneously to obtain the CODER TEST menu		
5	Check the yaw orders received from the computer as generated by the coder		
a	On the coder control panel, set the SELECT switch to YAW		
b	From the computer CODER TEST menu, select YAW and depress CR		
	CODER TEST 31 is displayed on the computer display		Refer to figure 36.
	On the coder control panel, the YAW/ZERO indicator is extinguished		
c	Depress CTL and C simultaneously to obtain CODER TEST 35		
d	Set the MTR range to center the number four yaw pulse in the range notch. Set the range MAN-AID-AUTO switch to AUTO		
	Only one pulse appears in the range notch.		Refer to figure 36
	The COORD DISPLAY indicates between 14,314 and 14,374 yards		Refer to figure 36
e	Set the range MAN-AID-AUTO switch to MAN		
f	By depressing CTL and C simultaneously, sequentially step the computer CODER TEST from 36 to 44.		
	For each CODER TEST step, the number four yaw pulse moves to the right (out in range).		Perform the procedures in table 5-21
g	Adjust the MTR range handwheel to center the number four yaw pulse in the range notch (pulse farthest out in range).		
h	Set the range MAN-AID-AUTO switch to AUTO		
	The COORD DISPLAY indicates between 20,051 and 20,111 yards.		Refer to figure 36
	On the coder control panel, the YAW/+MAX indicator is illuminated.		Refer to figure 36.
i	Set the range MAN-AID-AUTO switch to MAN		
j	Depress CTL and C simultaneously to obtain CODER TEST 45		
	On the coder control panel, the YAW/+MAX indicator is extinguished		Refer to figure 36
	The range of the number four yaw pulse decreases slightly		Refer to figure 36.
k	Depress CTL and C simultaneously to obtain CODER TEST 46		

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(U) Table 4-18. Monthly Radar Coder Checks—MTR—Continued

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Step	Operation	Normal indication	Corrective procedure																
5.	Continued																		
	t Set the MTR range to 14,344 yards.	A single pulse appears in the sweep expansion pulse.	Refer to figure 36																
	m. By depressing CTL and C simultaneously, sequentially step the CODER TEST from 47 to 55	For each CODER TEST step, the number four yaw pulse moves to the left (decreasing range).	Refer to figure 36.																
	n. Adjust the MTR range handwheel to obtain an indication of 8,606 yards on the MTR RSPU COORD display	On the coder control panel, the YAW/ MAX indicator is illuminated.	Refer to figure 36																
		A single pulse appears in the sweep expansion pulse.	Refer to figure 36																
	o. Adjust the MTR range handwheel to center the pulse in the range notch																		
	p Set the range MAN-AID-AUTO switch to AUTO	The COORD DISPLAY indicates between 8,576 to 8,636 yards.	Refer to figure 36																
	q Set the range MAN-AID-AUTO switch to MAN.																		
	r Depress CTL and C simultaneously to obtain CODER TEST 56	On the coder control panel, the YAW/ MAX indicator is extinguished.																	
6.	Check the position of the pitch and yaw number three pulses.																		
	a. On the coder control panel, set the switches as indicated.																		
		<table><tr><th>Switch</th><th>Setting</th></tr><tr><td>PREKNOCK</td><td>TEST</td></tr><tr><td>COMMAND ORIGIN</td><td>SIMULATED</td></tr><tr><td>PITCH</td><td>+MAX</td></tr><tr><td>YAW</td><td>ZERO</td></tr><tr><td>BURST ORDER</td><td>NORMAL</td></tr><tr><td>BURST ENABLE</td><td>NORMAL</td></tr><tr><td>SELECT</td><td>BOTH</td></tr></table>	Switch	Setting	PREKNOCK	TEST	COMMAND ORIGIN	SIMULATED	PITCH	+MAX	YAW	ZERO	BURST ORDER	NORMAL	BURST ENABLE	NORMAL	SELECT	BOTH	
Switch	Setting																		
PREKNOCK	TEST																		
COMMAND ORIGIN	SIMULATED																		
PITCH	+MAX																		
YAW	ZERO																		
BURST ORDER	NORMAL																		
BURST ENABLE	NORMAL																		
SELECT	BOTH																		
	b. Adjust the MTR range handwheel to place the range notch under the number 3 pitch pulse (one pulse in from the pulse farthest out in range).																		

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(U) Table 4-18. Monthly Radar Coder Checks-MTR Continued

## CONFIDENTIAL

Step	Operation	Normal indication	Corrective procedure
6.	Continued		
	c. Set the range MAN-AID-AUTO switch to AUTO.	The COORD DISPLAY indicates between 18,956 and 19,076 yards.	Refer to figure 36.
	d. Set the range MAN-AID-AUTO switch to MAN		
	e. On the coder control panel, set the YAW switch to +MAX	A second pulse appears on the range indicator within the sweep expansion pulse.	Refer to figure 36
	f. Set the PITCH switch to ZERO		
	g. Adjust the MTR range handwheel to center the pulse within the sweep expansion area in the range notch.		
	h. Set the range MAN-AID-AUTO switch to AUTO.	The COORD DISPLAY indicates between 18,792 and 18,912 yards.	Refer to figure 36
	i. Set the range MAN-AID-AUTO switch to MAN		
	j. Set the YAW switch to ZERO.		
7.	Check the position of the burst pulse.		
	a. Adjust the MTR range handwheel to obtain an indication of 0 yards on the MTR RSPU COORD display	Only one pulse appears in the sweep expansion area.	Refer to figure 36.
	b. On the coder control panel, set the BURST ORDER switch to TEST	A second pulse appears within the sweep expansion area.	Refer to figure 36
	c. Adjust the MTR range handwheel to center the range notch on the pulse within the sweep expansion area which is the farthest out in range		
	d. Set the range MAN-AID-AUTO switch to AUTO	The COORD DISPLAY indicates between 216 and 276 yards.	Refer to figure 36.
	e. Set the range MAN-AID-AUTO switch to MAN.		
	f. Set the BURST ORDER switch to NORMAL.		
8.	Check the assigned battery code pulse spacing.		
	a. On the coder control panel, set the BATTERY CODE switch to the assigned code		
	b. On the MTR RSPU, set the BEACON DELAY switches to 0000. Depress the ENTER switch		

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(L) Table 4-18. Monthly Radar Code Checks-MTR-Continued

**CONFIDENTIAL**

Step	Operation	Normal indication	Corrective procedure
8.	Continued		
c	Adjust the MTR range handwheel to center the range notch on the pulse closest in (No. 1 pulse)		
d	Set the range MAN-AID-AUTO switch to AUTO		
e	On the MTR RSPU, adjust the BEACON DELAY switches and momentarily depress the ENTER switch until the COORD DISPLAY indicates 0 yards		
f	Set the range MAN-AID-AUTO switch to MAN		
g	Adjust the MIR range handwheel to center the second pulse in the range notch		
h	Set the range MAN-AID-AUTO switch to AUTO		
	The COORD DISPLAY indicates within 30 yards of the value given below for the assigned battery code (check only assigned battery code).		
	Battery code	Range	Battery code Range
	1	328	9 2,295
	2	410	10 2,377
	3	820	11 2,787
	4	902	12 2,869
	5	1,311	13 3,279
	6	1,393	14 3,361
	7	1,803	15 3,770
	8	1,885	16 3,852
	Refer to figure 36		
i	Set the range MAN-AID-AUTO switch to MAN		
9	Deenergize the MTR transmitter		
	Rotate the HV SUPPLY knob fully counterclockwise and depress the HV SUPPLY-OFF switch		
10.	Reestablish the switch positions,		
a.	On the missile track control power supply, set the AGC-MANUAL switch to AGC		
b.	On the missile error voltage monitor, set the PRESET switch to 1.		
c	On the coder control panel, set the PREKNOCK switch to NORMAL and the COM MAND ORIGIN switch to NORMAL.		
d	On the MTR RSPU, set the BEACON DELAY switches to the setting noted in step 4d above. Depress the ENTER pushbutton.		
11	Reestablish the computer status.		
	Notify the computer operator that the checks have been completed		

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(U) Table 4-18.1 Monthly Acquire and Command Checks—MTR

## UNCLASSIFIED

Step	Operation	Normal indication	Corrective procedure
	Perform the procedures in table 3-13.		

(U) Table 4-18.2 Monthly Track and Reject Checks—MTR

## UNCLASSIFIED

Step	Operation	Normal indication	Corrective procedure
1.	Prepare for the MTR track and reject checks		
a	Perform the procedures in Table 2-1. <sup>1</sup>		
b	On the target indicator group verify that the TEST switch is set to TEST.		
c	On the TTR IF test generator, set the switches as indicated		
	Switch	Setting	
	OSC	OFF	
	MODE	CW	
	COARSE IF FREQ ADJUST	0	
	0-9 dB ATTENUATOR	0	
	0-90 dB ATTENUATOR	0	
d	On the TTR IF test generator, disconnect P128 from J4 ATT OUT. Connect coaxial cable from J4 ATT OUT to J2 TEST on the MTR sum main IF amplifier.		
e	On the missile indicator group verify that the TARGET STANDBY MISSILE switch is set to STANDBY.		
f	On the missile track control drawer, set the switches as indicated		
	Switch	Setting	
	TEST	TEST	
	DISABLE	down	
	MAN-AID-AUTO (all)	MAN	
	REJECT	(momentarily depress)	
g	On the missile track control power supply, set the back panel OVERRIDE switch to ON.		
h	On the missile track indicator, rotate the SIGNAL LIGHTS knob fully clockwise.		
2.	Prepare the computer for the MTR track and reject checks.		
a	Have the computer operator perform the procedures in b through f below.		
b	Energize the computer as prescribed in the daily power checks in TM 9 1430 1251 12-1.		

<sup>1</sup> Omit this step if the checks in the preceding tables have been performed in sequence.

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(U) Table 4-18.2. Monthly Track and Reject Checks: MTR—Continued

**UNCLASSIFIED**

Step	Operation	Normal indication	Corrective procedure
2	Continued		
	c	On the keyboard/display, enter 7 and depress CR	
	d	Enter DSC and depress CR	
	e	Enter CLR and depress CR	
	f	Enter SET and depress CR	
3.	Check the local designate and missile ready indicators.		
	a	On the missile track indicator, verify that the LOCAL DESIGNATE and the MISSILE READY switches are set to off (down)	
		On the missile track indicator, the SECTION and LAUNCHER indicator lights are not illuminated.	Refer to figure 43 in TM 9-1430-1254-20/2
		On the missile control-indicator group, the green DESIGNATE, READY, FIRE, LAUNCH and BIRST indicator lights are not illuminated. All amber indicator lights are illuminated.	Refer to figure 43 in TM 9-1430-1254-20/2
	b	Set the LOCAL DESIGNATE switch to the on (up) position	
	c	On the missile track indicator, depress any single SECTION pushbutton and single LAUNCHER pushbutton	
		The green DESIGNATE indicator light is illuminated. The corresponding amber indicator light is extinguished.	Refer to figure 43 in TM 9-1430-1254-20/2
		The selected SECTION and LAUNCHER indicator lights are illuminated.	Refer to figure 43 in TM 9-1430-1254-20/2
	d	Set the MISSILE READY switch to the on (up) position	
		The green READY indicator light illuminates. The corresponding amber indicator light is extinguished.	Refer to figure 44 in TM 9-1430-1254-20/2
4.	Position the MTR antenna.		
	a	On the missile track control drawer, operate and hold the LAUNCHER ACQUIRE switch. After the antenna stops slewing, record the elevation and azimuth LED indications on the missile track indicator. Continue to hold the LAUNCHER ACQUIRE switch.	

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**CONFIDENTIAL***(U, Table 4-18.2 Monthly Track and Reject Checks-MTR-Continued)***UNCLASSIFIED**

Step	Operation	Normal Indication	Corrective Procedure
4	Continued		
	b On the MTR azimuth equipment enclosure, set the ANTENNA switch to DISABLE	On the radar power control-indicator the three MISSILE-350V fuse indicator lights on the fuse panel are illuminated.	Refer to figure 24
	c Release the LAUNCHER ACQUIRE switch	The elevation and azimuth LED indications are within 5 mils of the indications recorded in a above.	Set the ANTENNA switch to NORM AL. Repeat step 4
5	Check for obtaining TRACK status with large signal levels.		
	a On the missile track control drawer, set the TEST switch to operate down	The green TRACK indicator light on the missile control-indicator group does not illuminate.	(1) Refer to figure 34. (2) Refer to figure 45 in TM 9-1430-1254-20/2
	b On the TTR IF test generator, set the OSC switch to ON	The green TRACK indicator light illuminates. The corresponding amber indicator light extinguishes.	(1) Set the ANTENNA switch to NORMAL. Repeat the procedures in step 4. (2) Refer to figures 17 and 34 (3) Refer to figure 45 in TM 9-1430-1254-20/2
6.	Check for conditions which determine TRACK status.		
	a While observing the RECEIVED SIGNAL meter on the missile control-indicator group, set the 0.9 dB ATTENUATOR and 0-90 dB ATTENUATOR switches on the TTR IF test generator to obtain a meter indication of approximately 2. Record the switch settings.	The green TRACK indicator light on the missile control-indicator group has extinguished	(1) Perform the procedures in table 3-13.1. Repeat steps 5 and 6 (2) Refer to figures 17 and 34 (3) Refer to figure 45 in TM 9-1430-1254-20/2

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(U) Table 4 is • Monthly Track and Reject Checks: MTR—Continued

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Step	Operation	Normal indication	Corrective procedure
6	Continued		
b	Depress the TRACKED pushbutton on the missile control indicator group	The green TRACK indicator light illuminates.	Refer to figure 45 in TM 9-1430-1254-20/2
c	Depress the REJECT pushbutton on the missile control indicator group	The green TRACK indicator light extinguishes.	Refer to figures 45 and 46 in TM 9-1430-1254-20/2
d	Set the 0-9 dB ATTENUATOR and 0-90 dB ATTENUATOR switches to 0	The green TRACK indicator light illuminates.	(1) Refer to figure 34 (2) Refer to figure 45 in TM 9-1430-1254-20/2
f	On the missile track control power supply, set the OVERRIDE switch to OFF and then to ON in about one second.	The red OFF FREQ indicator light momentarily illuminates	Perform the procedures in table 5-15. If the MTR antenna position is changed, set the ANTENNA switch to NORMAL and repeat the procedures in step 4.
		The green TRACK indicator light momentarily extinguishes.	Refer to figure 34
g	Set the MISSILE READY switch on the missile track indicator to off and then to on (down and up).	The green READY and TRACK indicator lights on the missile control indicator group momentarily extinguish and the corresponding amber indicator lights momentarily illuminate.	Refer to figure 44 in TM 9-1430-1254-20/2.
h	On the TTR IF test generator, set the OSC switch to OFF	The green TRACK indicator light extinguishes.	Refer to figure 34
i	Set the DISABLE switch on the missile track control drawer to DISABLE and then to operate (down).	The green TRACK indicator light momentarily illuminates	Refer to figure 34

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RLI, Table 4-18.2 Monthly Track and Reject Checks—MTR—Continued

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Step	Operation	Normal indication	Corrective procedure
6.	Continued		
	1. Set the OSC switch to ON	The green TRACK indicator light illuminates.	Recheck antenna position per the normal indication in step 4b
7.	Check for effects of fire command on reject time intervals.		
	a. While observing the green TRACK indicator light on the missile control indicator group, set the OSC switch on the TTR IF test generator to OFF	The green TRACK indicator light extinguishes after a noticeable delay but within one second after operation of the OSC switch	Refer to figure 34.
	b. Set the OSC switch to ON.	The green TRACK indicator light illuminates.	Recheck antenna position per the normal indication in step 4c
	c. Have the computer operator select the fire command by entering 5 and depressing CR on the computer keyboard/display	On the missile control-indicator group, the green FIRE indicator light illuminates. The corresponding amber indicator light extinguishes	Refer to figure 44 in TM 9-1430-1254-20/2
	d. While observing the green TRACK indicator light, set the OSC switch to OFF	The green TRACK indicator light extinguishes within two to four seconds after the OSC switch is set to OFF	Refer to figure 34
	e. Set the OSC switch to ON	The green TRACK indicator light illuminates.	Recheck antenna position per the normal indication in step 4c
8.	Check for partial bypass of TRACK status circuit by the launch command.		
	a. Set the TTR IF test generator 0.9 JB ATTENUATOR and 0.90 dB ATTENUATOR switches to the settings recorded in step 6a above.	The green TRACK indicator light on the missile control indicator group is not illuminated	Refer to figures 17 and 34.



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(U) Table 4 18 2. Monthly Track and Reject Checks—MTR—Continued

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Step	Description	Normal and Abnormal	Corrective procedure
8.	Continued		
b	Have the computer operator select the launch command by entering 6 and depressing CR on the computer keyboard/display.	The green TRACK and LAUNCH indicator lights on the missile control-indicator group illuminate. The corresponding amber indicator lights extinguish.	Refer to figure 34
9	Check to verify that the burst command cancels TRACK status.		
a	Have the computer operator select the burst command by entering 15 and depressing CR on the computer keyboard/display.	The green BURST indicator light on the missile control indicator group illuminates. The corresponding amber indicator light is extinguished.	(1) Refer to figure 34 (2) Refer to figure 52 in TM 9-1430-1251-12-3
		The green TRACK indicator light on the missile control-indicator group extinguishes.	Refer to figure 34
b	Have the computer operator clear the discrete commands by entering 0 CR and CLR CR on the computer keyboard/display.	The green FIRE, LAUNCH and BURST indicator lights on the missile control-indicator group are extinguished.	Repeat step 9b
10	Check operation of IF attenuator and verify that TRACK status occurs only at designated LPU coordinates.		
a	On the missile track control drawer, set the TEST switch to TEST.		
b	On the MTR azimuth equipment enclosure, set the ANTENNA switch to NORMAL.	On the radar power control-indicator, the three MISSILE-350V fuse indicator lights on the fuse panel extinguish.	Refer to figure 24
c	Position the MTR antenna in elevation and azimuth to obtain LED indications approximately 100 mms greater than each of those recorded in step 4a above.		
d	Set the ANTENNA switch to DISABLE.	The three MISSILE-350V fuse indicator lights illuminate.	Refer to figure 24

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(U) Table 4-16.2. Monthly Track and Reject Checks -MTR--Continued

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Step	Operation	Normal indication	Corrective procedure
10	Continued		
e	On the TTR IF test generator, set the OSC switch to OFF and set the 0-9 dB AT TENUATOR and 0-90 dB ATTENUATOR switches to 0		
f	While observing the RECEIVED SIGNAL meter on the missile control-indicator group, set the TEST switch to operate (down)	The RECEIVED SIGNAL meter indication decreases. (It may reach the lower limit mechanical stop)	Refer to figures 17 and 34
		The green TRACK indicator light on the missile control-indicator group does not illuminate.	Refer to figure 34
g.	Set the OSC switch to ON	The green TRACK indicator light does not illuminate.	Refer to figure 34 (Check relay amplifier circuit.)
	<i>Note:</i> To prevent drifting of the antenna, step i below should be performed immediately after the green TRACK indicator illuminates in step h.		
h.	Set the ANTENNA switch to NORMAL	The three MISSILE--350V fuse indicator lights extinguish	Refer to figure 24
		The green TRACK indicator light illuminates.	Refer to figure 34. (Check relay amplifier circuit.)
i.	Set the TEST switch to TEST		
11	Return the system to normal operation		
a	On the TTR IF test generator, set the OSC switch to OFF and the 0-90 dB AT TENUATOR switch to 90		
b	Remove the coaxial cable from J2 TEST on the sum main IF amplifier and J4-ATT OUT on the TTR IF test generator. Reconnect P128 to J4 ATT OUT		
c	On the missile track indicator, set the MISSILE READY and LOCAL DESIGNATE switches to the off (down) positions.		
d	On the missile track control power supply, set the OVERRIDE switch to OFF		
e	Notify the computer operator that the checks have been completed		

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(U) Table 4 19 Monthly Transmitter Checks-TRR

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Step	Operation	Normal indication	Corrective procedure
1	Perform the procedures in table 2-22, steps 1 through 3, and table 3-14, steps 3 through 7		
2.	Check the high voltage limiters.		
	a	Operate the MAG A switch to MOD HV, and rotate the MOD A HV knob fully clockwise	
		The MAG A meter indication does not exceed the right edge of the green block.	Perform the modulator A procedures in table 5-27
			Refer to figure 87
	b	Release the MAG A switch and rotate the MOD A HV knob to obtain an indication in the center of the green block on the MAG A meter	
	c.	Set the MAG SEL switch to B	
	d	Operate the MAG B switch to MOD HV, and rotate the MOD B HV knob fully clockwise	
		The MAG B meter indication does not exceed the right edge of the green block.	Perform the modulator B procedures in table 5-27
			Refer to figure 87.
	e.	Release the MAG B switch.	
3.	Check the transmitter interaction in short pulse.		
	a	On the target track control-power supply, set the TRR PULSE WIDTH switch to SHORT	
	a 1	On the countermeasures control indicator, set the MAG SEL switch to A	
	b	Adjust the MOD A HV knob maximum counterclockwise. Quickly rotate the knob fully clockwise, then counterclockwise until the MAG A meter indicates in the center of the green block.	
		The indication of the MAG B meter does not change more than one needle width	Refer to figure 73.
	c.	Set the MAG SEL switch to B. Repeat b above	
	d	Rotate the MOD B HV knob fully counterclockwise. Quickly rotate the knob fully clockwise, then counterclockwise until the MAG B meter indicates in the center of the green block	
		The indication of the MAG A meter does not change more than one needle width	Refer to figure 73
	e.	Set the MAG SEL switch to A. Repeat d above.	

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(U) Table 4-19 Monthly Transmitter Checks-TRR-Continued

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Step	Deviation	Normal indication	Corrective procedure
4			<p>Prepare for the IRR transmitter reverse current circuit checks.</p> <p>On the meter control indicator in the range RF control power supply group set the TEST METER switch to TRANS A MOD HV and the PULSE switch to LONG</p>
*5			<p>Check the modulator high voltage reduction.</p> <p><i>Note:</i> The MAG A and MAG B meter dials do not have scale markings in order to establish zero references; the meter needle positions should be noted before high voltage is turned on.</p> <p>a On the countermeasures control indicator depress the MAG A HV ON switch and adjust the MOD A HV knob to obtain an indication in the center of the green block on the MAG A meter</p> <p>b Depress the MAG B HV ON switch and adjust the MOD B HV knob to obtain an indication in the center of the green block on the MAG B meter</p> <p>c While observing the TEST METER indication on the meter control indicator use a test lead to momentarily connect TP2 on the dc amplifier to ground</p> <p>While TP2 is connected to ground, the TEST METER indication is one-fourth scale or less.</p> <p>Refer to figure 73</p> <p>d On the meter control indicator, set the TEST METER switch to TRANS B-MOD HV</p> <p>e While observing the TEST METER indication on the meter control indicator, momentarily connect TP5 on the dc amplifier to ground.</p> <p>While TP5 is connected to ground, the meter indication is one-fourth scale or less.</p> <p>Refer to figure 73.</p>
*6			<p>Check the modulator A reverse current circuit.</p> <p><i>Warning:</i> While performing the procedures in this step, personnel located at the antenna should be continually aware of the dangerous high voltage present in the modulator any time the magnetrons are energized.</p> <p>a On the countermeasures control indicator, rotate the MOD A HV and MOD B HV knobs fully counterclockwise. Depress the MAG A HV OFF and MAG B-HV OFF switches.</p> <p>b After verifying that both magnetrons are turned off remove the clear plastic insulator shield from the modulator</p> <p>c Connect a test lead between terminal C of the modulator A pulse forming network and ground. Be careful not to make contact with any other terminal</p> <p>d Using the top two fastening screws, temporarily install the plastic shield removed in b above</p> <p>e Connect a dc voltmeter between TB13-127 (+) and ground (-) in the range RF control power supply group. (The expected voltage is approximately 68 volts positive.)</p>

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(1) Table 4-19. Monthly Transmitter Checks-TRR (Continued)

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Step	Operation	Normal indication	Corrective procedure
*6.	Continued		
	f. On the countermeasures control indicator, operate and lock the MAG A meter with to MOD HV.		
	g. Depress the MAG A-HV ON switch.		
	h. While observing the MAG A meter and the voltmeter, slowly rotate the MOD A HV knob to the maximum clockwise position, then to the maximum counterclockwise position.		
		The maximum voltmeter indication is between +64 and +75 volts.	
		The MAG A meter indication does not exceed one third of full scale.	
			Refer to figure 73.
	i. Disconnect the voltmeter connected in e above.		
*7.	Check the modulator B reverse current circuit.		
		Repeat the procedures in step 6b through i above, substituting B for A and IB1-128 for TB13-127.	
8.	Deenergize the TRR transmitter.		
	a. Rotate the MOD A HV and MOD B HV knobs fully counterclockwise.		
	b. Depress the MAG A-HV OFF switch.		
		The indication on the MAG B meter does not change more than one needle width.	
			Refer to figure 73.
	c. Depress the MAG A-HV ON switch.		
	d. Depress the MAG B-HV OFF switch.		
		The indication on the MAG A meter does not change more than one needle width.	
			Refer to figure 73.
	e. Depress the MAG A-HV OFF switch.		
*9.	Return the TRR to normal operation.		
	a. After verifying that both magnetrons are turned off, remove the plastic shield and the test lead. Reinstall the plastic shield.		
	b. On the meter control indicator, set the TEST METER switch to OFF.		
	c. On the antenna support base, set the BLOWER switch to ON and the ANTENNA switch to NORMAL.		

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(U) Table 4-20. Monthly Ferrite Switch Checks-TRR

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Step	Operation	Normal indication	Corrective procedure
1.	<b>Prepare for the ferrite switch checks.</b>		
a	Perform the procedures in table 2-1. <sup>1</sup>		
b	Have the LOPAR operator select the LOPAR mode of operation		
c	On the range radar power control indicator set the REC INP. T switch to ANT		
d	On the range antenna support base, set the ANTENNA switch to DISABLE		
e	Set the BLOWER switch to OFF		
f	Using the FREQ switch on the meter control indicator in the range RF control-power supply group, tune both magnetrons to F5. Leave the TUNING TRANSMITTER switch set to A FAST		
g	On the RF power test set set the SCALE-db switch fully clockwise		
h	Calibrate the RF power test set by performing the procedures in table 3-14, step 6b through e		
i	On the meter control indicator set the TRANS ON ANT switch to E, the AUTO-MAN-PAN NO LOSS switch to MAN, and the PULSE switch to LONG		
2.	<b>Perform the ferrite switch checks.</b>		
a	On the countermeasures control indicator depress the MAG A HV ON switch. Adjust the MOD A HV knob to obtain an indication in the center of the green block on the MAG A meter		
b	On the ferrite switch driver assembly, set the ADJ A NORM switch to ADJ A and the ADJ C-NORM switch to NORM		

<sup>1</sup> Omit this step if the checks in the preceding tables have been performed in sequence**CONFIDENTIAL**

(U) Table 4 20. Monthly Ferrite Switch Checks-TRR-Continued

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Step	Operation	Normal indication	Corrective procedure
2.	<b>Continued</b>		
	c	On the ferrite switch driver assembly momentarily hold the TEST ADJ B-OPERATE switch in the TEST/ADJ B position. The RF power test set meter indication is between $\infty$ and 6 db. Perform the procedures in table 5-23	
	d	Using the FREQ switch on the control indicator, tune magnetron A to F3. Set the TUNING TRANSMITTER switch to REMOTE	
	e	On the RF power test set, set the ADJ MEAS switch to V.	
	f	On the meter control indicator, set the TRANSON ANT switch to A and the AUTO-MAN-PAN NO LOSS switch to PAN NO LOSS.	
	g	On the RF power test set, set the ADJ MEAS switch to MEAS.	
	h	On the ferrite switch driver assembly, set the ADJ A-NORM switch to NORM and the ADJ C-NORM switch to ADJ C.	
	i	Momentarily hold the TEST ADJ B-OPERATE switch in the TEST ADJ B position. The RF power test set meter indication is between $\infty$ and 6 db. Perform the procedures in table 5-23	
	j	On the countermeasures control indicator, rotate the MOD A HV knob fully counterclockwise and depress the MAG A-HV OFF switch.	
	k	On the meter control indicator, set the AUTO-MAN-PAN NO LOSS switch to MAN.	
	l	On the countermeasures control indicator, depress the MAG B-HV ON switch. Adjust the MOD B HV knob to obtain an indication in the center of the green block on the MAG B meter.	
	m	On the ferrite switch driver assembly, set the ADJ C-NORM switch to NORM. Momentarily hold the TEST ADJ B-OPERATE switch in the TEST ADJ B position. The power monitor indication is between $\infty$ and 6 db. Perform the procedures in table 5-23	
	n	On the countermeasures control indicator, rotate the MOD B HV knob fully counterclockwise and depress the MAG B-HV OFF switch.	
3	<b>Return the TRR to normal operation.</b>		
	a	On the RF power test set, set the ADJ MEAS switch to V and the SCALE db switch to 0.	
	b	Set the BLOWER switch to ON and the ANTENNA switch to NORMAL.	

(U) Table 4 21. Monthly Target AFC Checks-TRR

**UNCLASSIFIED**

Step	Operation	Normal indication	Corrective procedure
1	Perform the daily target AFC check procedures in table 2-23, steps 1 through 2f.		

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U, Table 4 21 Monthly Target AFC Checks-TBR-Continued

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Step	Operation	Normal indication	Corrective procedure
2	Prepare for additional checks.		
a.	At the range antenna support base, set the ANTENNA switch to DISABLE and the BLOWER switch to OFF.		
b.	On the meter control-indicator, set the switches as indicated.		
	<i>Switch</i>	<i>Setting</i>	
	TUNING TRANSMITTER	A FAST	
	PULSE	SHORT	
	TRANS ON ANT	A	
	AUTO-MAN-PAN NO LOSS	MAN	
c.	Operate and hold the FREQ switch on the meter control-indicator to DCR until the tuning drive motor for magnetron A stops.		
d.	Set the TUNING TRANSMITTER switch to B FAST.		
e.	Repeat c above for magnetron B.		
3	Check the A channel crystal current and local oscillator (VTO) output.		
a.	Set the XTAL CURRENT switch to each position from RCVR A CR1 through CR8.		
	The XTAL CURRENT meter indicates a steady value between 40 and 100 $\mu$ a for each position.		
	(1) Select the XTAL position with the highest indication on the XTAL CURRENT meter. Adjust AT3 on the associated frequency mixer to bring the indication to full scale. Repeat a above.		
	*(2) If the XTAL CURRENT meter indication is 0 for several positions, ascertain that the crystals are good. If the crystals are bad, replace the associated TRL and install new crystals.		
	On the A target AFC, the AFC LOCK indicator is illuminated.		
	Perform the procedures in table 5-22.		
b.	Set the XTAL CURRENT switch to RCVR A-CR5.		
c.	Set the TUNING TRANSMITTER switch to A SLOW.		
d.	Operate and hold the FREQ switch to INC until the tuning drive motor on magnetron A stops.		

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(U) Table 4-21 Monthly Target AFC Checks—TRR—Continued

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Step	Operation	Normal indication	Corrective procedure
3.	Continued	The XTAL CURRENT meter indicates a steady value between 40 and 100 $\mu$ A.	If necessary, adjust AT3 on the A frequency mixer.
		The AFC LOCK indicator is illuminated and steady as the magnetron frequency is varied.	Perform the procedures in table 5-22.
	c. Repeat the procedures in a above.		
	f. If AT3 was adjusted, repeat a through e above.		
	g. Operate and hold the FREQ switch to DCR to tune the magnetron near mic frequency.		
4.	Check the B channel crystal current and local oscillator (VTO) output.		
	a. Set the TRANS ON ANT switch to B.		
	b. Repeat step 3 above, substituting B for A.		
5.	Check the AFC lock-on channel.		
	a. On the A target AFC, remove the coaxial cable from J3-1F IN.	The AFC LOCK indicator extinguishes.	Refer to figure 74.
	b. Reconnect the coaxial cable to J3-1F IN.	The AFC LOCK indicator illuminates.	Refer to figure 74.
	c. Repeat a and b above for the B target AFC.		
6.	Return the TRR to normal operation.		
	a. Set the XTAL CURRENT switch to OFF.		
	b. Set the TUNING TRANSMITTER switch to REMOTE.		
	c. Set the BLOWER switch to ON.		
	d. Set the ANTENNA switch to NORMAL.		
7.	Deenergize the TRR transmitters.		
	a. Rotate the MOD A HV and MOD B HV knobs fully counterclockwise.		
	b. Depress the MAG A HV OFF and MAG B HV OFF switches.		

(U) Table 4-22 Monthly Range Synchronizer Standby Checks—TRR

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Step	Operation	Normal indication	Corrective procedure
1.	Prepare for the synchronizer standby checks.		
	a. Have the LOPAR operator select the LOPAR mode of operation.		

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(U) Table 4-22. Monthly Range Synchronizer Standby Checks-TRR-Continued

**UNCLASSIFIED**

Step	Operation	Normal indicator action	Corrective procedure
1	Continued		
b	On the range radar power control indicator, set the TEST OPERATE switch to TEST, the PULSE switch to SHORT and the MAN. AUTO switch to MAN.		
c	Insure that the MP-OFF indicator on the pulse generator indicator is illuminated and that the target PLATE VOLTS switch is set to ON.		
d	On the countermeasures control indicator, depress the MAG A-HV CN switch.		
e	Adjust the MOD A HV knob to obtain an indication in the center of the green block on the MAG A meter.		
2	Perform the synchronizer standby checks.		
a	On the target track control-power supply, set the IND HV switch to OFF.		
b	Set the target PLATE VOLTS switch to OFF.		
		The indication on the MAG A meter remains in the center of the green block.	On the range synchronizer, adjust the FREQUENCY LOPAR-SHORT PULSE variable resistor. Refer to figure 72.
c	Set the PULSE switch to LONG.		
		The indication on the MAG A meter remains in the center of the green block.	Adjust the FREQUENCY-LOPAR-LONG PULSE variable resistor. Refer to figure 72.
d	Have the LOPAR operator select the HPAK mode of operation.		
		The indication on the MAG A meter remains in the center of the green block.	Adjust the FREQUENCY HIPAR-LONG PULSE variable resistor. Refer to figure 72.
e	Set the PULSE switch to SHORT.		
		The indication on the MAG A meter remains in the center of the green block.	Adjust the FREQUENCY HIPAR-SHORT PULSE variable resistor. Refer to figure 72.
f	Set the TARGET PLATE VOLTS switch to ON.		
g	Set the IND HV switch to ON.		
3	Deenergize the TRR transmitter.		
a	Rotate the MOD A HV knob fully counterclockwise.		
b	Depress the MAG A-HV OFF switch.		

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(U) Table 4-22.1 Monthly Lin-Log Receiver Checks-TRR

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Step	Operation	Normal indication	Corrective procedure
	Perform the procedures in table 2-24		

(U) Table 4-23. Monthly Lin-Log Receiver Checks-TRR

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Step	Operation	Normal indication	Corrective procedure
1.	Prepare for the lin-log receiver checks.		
a	Perform the procedures in table 2-1. <sup>1</sup>		
b	On the range radar power control indicator, set the switches as indicated		
	Switch	Setting	
	TEST-OPERATE	TEST	
	MAG SEL	A	
	RANGE ZERO	OFF	
	AUTO-MAN	MAN	
	PULSE	LONG	
	RADAR GAIN	LIN-LOG	
	REC INPUT	ANT	
2	Energize the A transmitter.		
a	On the countermeasures control indicator, rotate the MOD A HV knob fully counter clockwise and depress the MAG A-HV ON switch.		
b	Adjust the MOD A HV knob to obtain an indication in the center of the green block on the MAG A meter.		
3.	Check the voltage amplitude of the transmitter pulse.		
a	On the target ranging radar control, connect a test cable between the TRR VID jack and the vertical input of the test oscilloscope		
	The transmitter pulse amplitude is between +4.25 and +4.75 volts.		
	Perform the procedures in table 5-24		
b	Disconnect the test cable from the TRR VID jack and from the test oscilloscope		
4.	Perform the procedures for observing the TTR or TRR transmitter pulse		
	Note: Perform this step only if the complete transmitter pulse is not visible on the indicators. It may be necessary to increase antenna elevation to reduce ground clutter in order to make the pulse visible.		
a	On the target track control power supply, set the IND switch to R		
b	Set the TTR range to approximately 15,000 yards.		

<sup>1</sup> Omit this step if the checks in the preceding tables have been performed in sequence.**CONFIDENTIAL**

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(U) Table 4-23. Monthly Lin-Log Receiver Checks—TRR—Continued

## UNCLASSIFIED

Step	Operation	Normal indication	Corrective procedure
4.	<b>Continued</b>		
	c. On the TTR RSPU, set the switches as indicated.		
		<i>Switch</i>	<i>Setting</i>
		MODE	MMI
		MICROPROCESSOR SELECT	PCS
		TEST ADDRESS	9801
		DATA	3 LP
			0, 1, 2, 4-7 DOWN
	d. Momentarily depress the WRITE DATA switch		
	The transmitter pulse is visible on the TTR range indicator.		
	Refer to figure 52		
5	Check the transmitter pulse amplitude on the target range indicator.		
	a. Observe the lower sweep of the TTR target range indicator.		
	The transmitter pulse amplitude is between 1-1/4 and 1-1/2 inches.		
	On the TTR RSPU, adjust A23 R4		
	Refer to figure 52		
	b. If the procedures in step 4 above were performed, set the TTR RSPU MODE switch to OPR.		
6	<b>Deenergize the A transmitter</b>		
	On the countermeasures control indicator, turn the MOD A HV knob fully counterclockwise and depress the MAG A HV OFF switch.		
7.	Perform the daily lin-log receiver check procedures in table 2-25.		

(U) Table 4-24. Monthly Panoramic Receiver Checks—TRR

## UNCLASSIFIED

Step	Operation	Normal indication	Corrective procedure
1.	<b>Prepare for the panoramic receiver checks.</b>		
	a. Perform the procedures in table 2-1. <sup>1</sup>		
	b. On the range radar power control indicator, set the TEST OPERATE switch to TEST and the NOISE OUTPUT switch to PAN.		
	c. At the range antenna support base, set the ANTENNA switch to DISABLE and the BLOWER switch to OFF		
2.	<b>Check the PAN receiver crystal current.</b>		
	a. On the range RF control power supply group, set the XTAL CURRENT SEL switch to CR1 and then to CR2		

<sup>1</sup> Omit this step if the checks in the preceding tables have been performed in sequence**CONFIDENTIAL**

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(U) Table 4 24 Monthly Panoramic Receiver Checks-TRR Continued

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Step	Operation	Normal indication	Corrective procedure
2.	Continued	<p>The PAN XTAL CURRENT meter indicates a value between 0.5 and 3.0 ma for each position</p> <p>In the panoramic frequency mixer, adjust variable attenuator AT4 for a current of 1 ma for the crystal with the lower indication</p> <p>Refer to figure 75</p>	
	b. Set the XTAL CURRENT SEL switch to OFF		
	c. Set the BLOWER switch to ON and the ANTENNA switch to NORMAL		
3	Perform the daily panoramic receiver check procedures in table 2-26.		

(U) Table 4 24.1 Monthly Countermeasures Control-Indicator Checks-TRR

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Step	Operation	Normal indication	Corrective procedure
	Perform the procedures in table 3-15		

(U) Table 4 25. Monthly Automatic Channel Selector Checks-TRR

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Step	Operation	Normal indication	Corrective procedure
1	Prepare for the automatic channel selector (ACS) checks.		
	a. Perform the procedures in table 2-1.		
	b. On the range radar power control-indicator, set the switches as indicated		
	Switch	Setting	
	TEST-OPERATE	TEST	
	MAG SEL	B	
	FREQUENCY A-B	B	
	RANGE ZERO	OFF	
	AUTO-MAN	MAN	
	PULSE	LONG	
	NOISE OUTPUT	RADAR	
	REC INPUT	NOISE LAMP	
	c. Operate the FREQUENCY DCR INCR switch to tune MAG B for an indication of 3.2 on the FREQUENCY meter.		

<sup>1</sup> Omit this step if the checks in the preceding tables have been performed in sequence**CONFIDENTIAL**

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(U) Table 4-25. Monthly Automatic Channel Selector Checks—TRR—Continued

**CONFIDENTIAL**

Step	Operation	Normal indication	Corrective procedure
1.	Continued		
	a	Set the MAG SEL switch to A and the FREQUENCY A/B switch to A	
	e	Operate the FREQUENCY DCR/INCR switch to tune MAG A for an indication of 2.8 on the FREQUENCY meter	
	f	On the TRR IF test generator, verify that the OSC switch is set to OFF	
2.	Check the ACS logarithmic amplifier dc balance.		
	<i>Note:</i> For the remainder of this table all switches, meters, controls and attenuators are located on the ACS unit unless otherwise indicated.		
	a	On the ACS attenuator, note the switch settings and then set the switches for greater than 60 db	
	b.	Set the ACS METER MONITOR switch to IN LEV	
	c	Momentarily hold the ACS SENSITIVITY switch in the X10 position	
		The ACS meter indicates between 0 and 20.	
			On the ACS logarithmic amplifier, adjust the OUTPUT OFFSET control to obtain a meter indication of 10.
			Refer to figure 71 1.
	d	On the ACS attenuator, set the switches to the settings noted in a above	
3.	Check the receiver noise power levels monitored by the ACS.		
	a.	Hold the ACS SENSITIVITY switch in the X10 position	
		The ACS meter indicates between 145 and 155.	
			Set the ACS attenuator switches to obtain the required indication.
		The ACS attenuator switch settings equal 30 db or greater.	
			On ACS linear IF amplifier A6 in the TRR receiver subassembly, adjust the GAIN ADJ control clockwise until a maximum indication is obtained on the ACS meter. Repeat a above
			Refer to figure 71 1
	b	Note the ACS meter indication.	
	c	Set the ACS METER MONITOR switch to A LEV	
		The ACS meter indicates within 15 of the value noted in b above	
			Refer to figure 71 1
	d.	Set the ACS METER MONITOR switch to B LEV.	
		The ACS meter indicates within 15 of the value noted in b above.	
			Refer to figure 71 1.
	e	Release the ACS SENSITIVITY switch	

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U, Table 4-25 Monthly Automatic Channel Selector Checks-TTR-Continued

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Step	Operation	Normal indication	Corrective procedure
4.	<b>Check the ACS threshold adjustment.</b>		
	a	On the range radar power control indicator, set the NOISE OUTPUT switch to OFF. The TEST 2 indicator is extinguished (flickering is permissible).	Perform the procedures in step 5 below.
	b.	Note the ACS attenuator switch settings. Remove 5 db. The TEST 2 indicator is illuminated.	Perform the procedures in step 5 below.
	c	Return the ACS attenuator switches to the settings noted in b above.	
	d.	Proceed to step 6 below.	
5.	<b>Set the ACS threshold adjustment.</b>		
	a	On the range radar power control indicator, verify that the NOISE OUTPUT switch is set to OFF.	
	b	Note the ACS attenuator switch settings, remove 3 db.	
	c	Unlock the THRESHOLD ADJ dial and rotate the THRESHOLD ADJ control clockwise until the TEST 2 indicator is completely illuminated (no flickering).	
	d	Rotate the THRESHOLD ADJ control counterclockwise until the TEST 2 indicator just starts to extinguish (flicker). Lock the THRESHOLD ADJ dial.	
	e	Reset the ACS attenuator switches to the settings noted in b above.	
	f.	Repeat step 4 above.	
6	<b>Check the ACS balance adjustment.</b>		
	a	On the range radar power control indicator, verify that the NOISE OUTPUT switch is set to OFF.	

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(U) Table 4-25 Monthly Automatic Channel Selector Checks—TRR—Continued

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Step	Operation	Normal indication	Corrective procedure
6.	Continued		
		The TEST 1 indicator is illuminated (flickering is permissible).	Perform the procedures in step 7 below
b	On the range radar power control-indicator, momentarily depress the NOISE LAMP ON switch	The TEST 1 indicator extinguishes.	(1) Perform the procedures in step 7 below (2) Set the NOISE OUTPUT switch to RADAR and perform the procedures in table 2-25, step 4. Repeat step 6 Refer to figure 71.1
c.	Proceed to step 8 below		
7.	Set the ACS balance adjustment.		
a	On the range radar power control-indicator, set the NOISE OUTPUT switch to OFF.		
b	Unlock the BALANCE dial and rotate the BALANCE ADJ control clockwise until the TEST 1 indicator is illuminated		
c.	Operate and hold the BALANCE switch in the ADJ position and rotate the BALANCE ADJ control counterclockwise until the TEST 1 indicator just starts to extinguish (flicker).		
d.	Release the BALANCE switch and lock the BALANCE dial		
e.	Repeat step 6 above		
8.	Check the dynamic range of the ACS unit.		
a.	Note the ACS attenuator switch settings. Set the switches to 0 db		
b.	Repeat step 6a and b above.		
c	Reset the ACS attenuator switches to the settings noted in a above.		
9.	Check the control of magnetron selection by the ACS.		
a	On the IF test generator, set the switches as indicated:		
	Setting	Switch	
	0-30 dB ATTENUATOR	60	
	0-9 dB ATTENUATOR	0	
	MODE	CW	
b	On the range radar power control indicator, set the switches as indicated		
	Switch	Setting	
	MAN-AUTO	AUTO	
	MAG SEL	B	



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(L) Table 4-25 Monthly Automatic Channel Selector Checks TRR-Continued

**CONFIDENTIAL**

Step	Operation	Normal indication	Corrective procedure
9.	Continued		
		The TEST 1 indicator is illuminated (flickering is permissible). The TEST 2 indicator is extinguished.	Repeat the procedures in table 4-25. Refer to figure 71.1.
		On the countermeasures control indicator, the A SEL indicator is illuminated and the B SEL indicator is extinguished.	Refer to figure 71.1.
c.	On the IF test generator, set the OSC switch to ON.		
d.	Note the indication on the BALANCE dial. Unlock the BALANCE dial and rotate the BALANCE control until the TEST 1 indicator is extinguished.		
		The TEST 1 indicator is extinguished.	Refer to figure 71.1.
		The TEST 2 indicator is illuminated.	Repeat the procedures in table 4-25.
		On the countermeasures control indicator, the B SEL indicator is illuminated and the A SEL indicator is extinguished.	Refer to figure 71.1.
e.	Set the BALANCE dial to the position noted in d above and relock the BALANCE dial.		
10.	Reestablish the switch positions.		
a.	Set the ACS METER MONITOR switch to OFF.		
b.	On the IF test generator, set the 0-90 dB ATTENUATOR switch to 90 dB and the OSC switch to OFF.		
c.	On the range radar control indicator, set the switches as indicated		
	Switch	Setting	
	TEST-OPERATE	OPERATE	
	MAN-AUTO	MAN	
	MAG SEL	A	
	REC INPUT	ANT	

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**CONFIDENTIAL***Table 4-22 Monthly Bore-sight Checks-TTR***UNCLASSIFIED**

Step	Operation	Normal indication	Corrective procedure
	Perform the procedures in table 3-16		

*Table 4-23 Monthly Telescope Collimation Checks-TRR***UNCLASSIFIED**

Step	Operation	Normal indication	Corrective procedure
	Perform the procedures in table 3-17.		

*Table 4-23 Monthly Remote Switching Checks-TTR and TRR***UNCLASSIFIED**

Step	Operation	Normal indication	Corrective procedure
	Perform the procedures in table 3-18		

*Table 4-25 Monthly Track Data Processor Checks***UNCLASSIFIED**

Step	Operation	Normal indication	Corrective procedure
	Perform the procedures in table 3-19.		

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(U) Table 4 26. Monthly Parallax Correction Checks--TRR

**UNCLASSIFIED**

Step	Operation	Normal indication	Corrective procedure
	<p>Note: The procedures in table 4 20 steps 2, 3 and 5 must be performed before performing the procedures in this table. Disregard references to the MTR.</p>		
1.	Prepare for the parallax correction checks.		
	a. Perform the procedures in table 2-1 <sup>1</sup>		
	b. On the range radar power control indicator, set the switches as indicated.		
	<i>Switch</i>	<i>Setting</i>	
	TEST-OPERATE	TEST	
	RANGE ZERO	OFF	
	PULSE	SHORT	
	RADAR GAIN	LIN-LOG	
	c. On the missile track control drawer, set the TEST switch to TEST.		
	d. On the track data processor, verify that MODE SWITCH is set to TACTICAL.		
2.	Check the operation of the TRR range parallax correction circuits.		
	a. On the TRR IF test generator, set the switches as indicated.		
	<i>Switch</i>	<i>Setting</i>	
	OSC	ON	
	MODE	PULSE	
	PULSE WIDTH	SHORT	
	SLEW	Center (off)	
	SLEW RATE	OFF	
	0-90 dB ATTENUATOR	40	
	0-9 dB ATTENUATOR	0	
	b. Remove coaxial cable P19 from J6 on the TRR IF test generator. Connect a coaxial cable from J6 to the TRR SYNC test jack.		
	c. On the TRR IF test generator, momentarily operate the RANGE PRE-SET switch. Set the COARSE IF FREQ ADJUST control to 0.		
	d. On the target antenna control group, set the RANGE TRACK switch to TRR and the MULTI BIN switch to ON.		
	e. On the TTR RSPU, set the COORD SELECT switch to D-FCN.		
	f. On the track data processor, set the N/S, E/W, and UP/DN TRR/TTR PARALLAX (YDS) switches to 00.		
	g. Set the TTR range to place the IF test pulse near the range notch.		
	h. On the target antenna control group, set the range MAN-ACQUIRE AID--TRACK AID-AUTO switch to ACQUIRE AID.		
	The IF test pulse has been acquired.		
	Reacquire the IF test pulse.		

<sup>1</sup> Omit this step if the checks in the preceding tables have been performed in sequence.

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(U) Table 4-26. Monthly Parallax Correction Checks-TRR-Continued

**UNCLASSIFIED**

Step	Operation	Normal indication	Corrective procedure								
2.	<b>Continued</b>										
i.	Position the TTR antenna elevation and azimuth to 800 0 mls										
j.	Set the range MAN ACQUIRE AID-TRACK AID-AUTO switch to AUTO and note the range indication on the TTR RSPL COORD DISPLAY Set the range switch to ACQUIRE AID										
k.	On the track data processor, set the TRR PARALLAX (YDS) switches as indicated										
	<p>Note Verify that the TEST-OPERATE switch on the range radar power control indicator is set to TEST</p> <table border="1"> <thead> <tr> <th>Switch</th><th>Setting</th></tr> </thead> <tbody> <tr> <td>N/S</td><td>N 50</td></tr> <tr> <td>E/W</td><td>E 50</td></tr> <tr> <td>UP/DN</td><td>UP 20</td></tr> </tbody> </table> <p>On the track data processor, the RUN indicator is illuminated, and the NON-TACTICAL indicator is not illuminated.</p>			Switch	Setting	N/S	N 50	E/W	E 50	UP/DN	UP 20
Switch	Setting										
N/S	N 50										
E/W	E 50										
UP/DN	UP 20										
	Set the range MAN ACQUIRE AID-TRACK AID-AUTO switch to AUTO										
	<p>The TTR RSPL COORD DISPLAY indication is between 54 and 74 yards greater than noted in j above.</p> <ol style="list-style-type: none"> <li>(1) Perform the procedures in table 5-29, steps 2a through 2h.</li> <li>(2) Check the +250 volts on the radar range power control indicator</li> <li>(3) Check the operation of the TRR target range synchronizer.</li> </ol> <p>Refer to figure 78.1.</p>										
m.	Set the range MAN-ACQUIRE AID-TRACK AID-AUTO switch to ACQUIRE AID										
n.	Set the N/S, E/W, and UP/DN TRR PARALLAX (YDS) switches to S, W, and DN										
o.	Set the range MAN-ACQUIRE AID-TRACK AID-AUTO switch to AUTO.										
	<p>The TRR RSPL COORD DISPLAY indication is between 54 and 74 yards less than noted in j above.</p> <p>Refer to the corrective procedure in i above</p>										
p.	On the target antenna control group, set the switches as indicated										
	<table border="1"> <thead> <tr> <th>Switch</th><th>Setting</th></tr> </thead> <tbody> <tr> <td>MAN ACQUIRE AID-TRACK AID-AUTO</td><td>MAN</td></tr> <tr> <td>RANGE TRACK</td><td>TTR</td></tr> <tr> <td>MULTI BIN</td><td>OFF</td></tr> </tbody> </table>	Switch	Setting	MAN ACQUIRE AID-TRACK AID-AUTO	MAN	RANGE TRACK	TTR	MULTI BIN	OFF		
Switch	Setting										
MAN ACQUIRE AID-TRACK AID-AUTO	MAN										
RANGE TRACK	TTR										
MULTI BIN	OFF										

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(U) Table 4 28. Monthly Parallax Correction Checks-TRR-Continued

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Step	Operation	Normal indication	Corrective procedure
2.	Continued		
	q	On the TRR IF test generator, set the OSC switch to OFF and remove the coaxial cable added in b above. Reconnect P19 to J6.	
	r	On the range radar power control indicator, set the TEST-OPERATE switch to OPERATE.	
	s	Set the required site IRR/TTR parallax on the TRR/TTR PARALLAX (YDS) switches.	
3.	Prepare for the angle-parallax checks.		
	a.	Set the TTR range to approximately 15,000 yards.	
	b.	Position the TTR antenna elevation and azimuth to 0 mils.	
	c.	Remove the cap on the azimuth correction transmitter in the range antenna support base and rotate the azimuth adjustment knob until the BASELINE AZIMUTH DIAL indicates 0 mils.	
	d.	On the antenna control computer, adjust the HORIZONTAL DISPLACEMENT dial to 84 yards.	
4.	Check the azimuth parallax correction.		
	a.	On the antenna control computer, observe the SHORT RANGE indicator.	
		The SHORT RANGE indicator is illuminated.	Refer to figure 89.
	b.	Observe the azimuth correction transmitter.	
		The AZIMUTH DIAL on the azimuth correction transmitter indicates between 6,399.8 and 0.2 mils.	Perform the procedures in table 3-20, steps 2 and 5 through 8. Disregard any reference to the MTR.
			Refer to figure 76.
	c.	Set the BASELINE AZIMUTH DIAL to 4,800 mils.	
		The AZIMUTH DIAL on the azimuth correction transmitter indicates between 5 and 9 mils.	Refer to figure 76.
	d.	Set the BASELINE AZIMUTH DIAL to 1,600 mils.	
		The AZIMUTH DIAL on the correction transmitter indicates between 6,391 and 6,395 mils.	Refer to figure 76.

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(U) Table 4-26 Monthly Parallax Correction Checks-TTR-Continued

**UNCLASSIFIED**

Step	Operation	Normal indication	Corrective procedure
5.	Check the elevation parallax correction.		
a	Set the BASELINE AZIMUTH DIAL on the azimuth correction transmitter to 0 mils	The elevation dial on the elevation transmitter indicates between -0.4 and +0.4 mils.	Perform the procedures in table 3-20, steps 2 and 5 through 8. Disregard any reference to the MTR.
b	Set the TTR antenna elevation to 800 mils.	The elevation dial on the elevation transmitter indicates between 801.5 and 806.5 mils.	Refer to figure 77.
c	Set the BASELINE AZIMUTH DIAL to 3,200 mils	The elevation dial on the elevation transmitter indicates between 793.5 and 798.5 mils.	Refer to figure 77
6.	Check the angle parallax at increased ranges.		
a	Verify that the TTR antenna is positioned to 0 mils azimuth and 800 mils elevation		
b	Set the TTR range to approximately 25,000 yards.	On the antenna control computer, the SHORT RANGE indicator is not illuminated.	Refer to figure 89
		The AZIMUTH DIAL on the azimuth correction transmitter indicates between 6,399.8 and 0.2 mils.	Refer to figure 76.
		The elevation dial on the elevation correction transmitter indicates between 799.6 and 800.4 mils.	Refer to figure 77.
7.	Return the antenna control computer to normal operation.		
a	Set the BASELINE AZIMUTH DIAL indication to the angle position required by the site. Replace the cap removed in step 8c above.		
b	Set the HORIZONTAL DISPLACEMENT dial to the horizontal displacement range required by the site		

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**CONFIDENTIAL***Table 4-26-1 Monthly Orientation Checks—TTR, MTR, and TRR***UNCLASSIFIED**

Step	Description	Normal indication	Corrective procedure
	Perform the procedures in table 3-20		

*(U) Table 4-27 Monthly Simultaneous Tracking Checks—TTR, MTR, and TRR***CONFIDENTIAL**

Step	Operation	Normal indication	Corrective procedure								
	Note: Have the computer operator perform the procedures in table 4-26-1 before performing these checks.										
1.	Perform the initial simultaneous tracking checks.										
	Perform the procedures in table 2-1. <sup>1</sup>										
2.	Prepare the TTR for the simultaneous tracking checks.										
	a	On the target antenna control group, set the TEST switch to the down position and the RANGE TRACK switch to TTR.									
	b	Set the magnetron frequency to the frequency used to perform the TTR range zero checks.									
3.	Prepare the MTR for the simultaneous tracking checks.										
	a	On the missile track control drawer, set the switches as indicated.									
		<table><tr><th>Switch</th><th>Setting</th></tr><tr><td>TEST</td><td>TEST</td></tr><tr><td>DISABLE</td><td>down</td></tr><tr><td>RANGE</td><td>NORMAL</td></tr></table>	Switch	Setting	TEST	TEST	DISABLE	down	RANGE	NORMAL	
Switch	Setting										
TEST	TEST										
DISABLE	down										
RANGE	NORMAL										
	b	On the missile error voltage monitor, set the BEACON TARGET switch to TARGET.									
4.	Prepare the TRR for the simultaneous tracking checks.										
	a	On the range radar power control indicator, verify that the TEST OPERATE switch is set to OPERATE.									
	b	On the countermeasures control indicator, set the MAN AUTO switch to MAN.									
5.	Prepare the intercept computer for the simultaneous tracking checks.										
	a	Energize the computer as prescribed in the daily power checks in TM 9 1430-1251-12-1.									
	b.	On the keyboard/display, enter 6 and depress CR.									
	c.	Enter STK and depress CR.									
	d	Turn on the printer/plotter only when data is available and a printout is required.									

<sup>1</sup> Omit this step if the checks in the preceding tables have been performed in sequence.**CONFIDENTIAL**

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Table 1. Moving Simultaneous Tracking Checks for TTR, MTR, and TRR Continued

**CONFIDENTIAL**

Step	Operation	Normal Indication	Countermeasures Indicator
6	<b>Energize the TTR, MTR, and TRR transmitters.</b>		
a	On the target track control power supply, rotate the HV SUPPLY knob to START and depress the HV SUPPLY-ON switch. Adjust the HV SUPPLY knob to obtain a indication in the center of the MAGNETRON meter white block.		
b	On the missile track control power supply, rotate the HV SUPPLY knob to START and depress the HV SUPPLY-ON switch. Adjust the HV SUPPLY knob to obtain an indication of 3 ms on the MAGNETRON meter.		
c	On the countermeasures control indicator, depress the MAG A HV and MAG B HV switches. Adjust the MOD A HV and MOD B HV knobs to obtain indications in the center of the MAG A and MAG B meters.		
7	<b>Prepare the system for the simultaneous tracking checks.</b>		
a	Set the printer/plotter POWER switch to ON.		
b	Obtain the target tracked status to release data to the computer.		
c	On the target antenna control group, momentarily depress the OFF TARGET switch.		
8	<b>Acquire and track a moving target with both tracking radar systems.</b>		
	<i>Note:</i> To expedite this check, a data may be designated on the battery control console.		
	Acquire and track in the automatic mode, the same target with the MTR and TTR at a range greater than 20,000 yards. For the target to be considered valid, the MTR RECEIVED SIGNAL and TTR TARGET SIGNAL STRENGTH meters should indicate an average value greater than 2 and 20, respectively. The target elevation angle for each radar should be greater than 25 mils above terrain and physical object masking.		
9.	<b>Perform the simultaneous tracking check with the MTR and TTR.</b>		
a	On the target track control power supply, set the TTR PULSE WIDTH switch to SHORT.		
b	When the tracking data for both the MTR and TTR are considered valid according to step 8 above, on the target antenna control group momentarily depress the TRACKED switch.		
c	After at least five data samples have been printed, momentarily depress the OFF TARGET switch.		
d	On the printer/plotter, momentarily operate the SLF SLW switch to SLW.		
e	Set the TTR PULSE WIDTH switch to LONG.		
f	Repeat b through d above.		
10.	<b>Perform the simultaneous tracking check with the MTR, TTR, and TRR.</b>		
a	On the TRR countermeasures control indicator, set the MAG SEL switch to A.		
b	On the target track control power supply, set the TRR PULSE WIDTH switch to SHORT.		
c	On the target antenna control group, set the RANGE TRACK switch to TRR.		

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**CONFIDENTIAL***(U, Table 4-27 Monthly Simultaneous Tracking Checks—TTR MTR and TRR—Continued)***CONFIDENTIAL**

Step	Operation	Normal indication	Corrective procedure
10.	Continued		
	d.	Repeat step 9b through d above	
	e	Set the TRR PULSE WIDTH switch to LONG and repeat step 9b through d above	
	f	Set the MAG SEL switch to B and repeat step 9b through d above	
	g	Set the TRR pulse width switch to SHORT and repeat step 9b through d above	
	h	On the printer/plotter, momentarily operate the FF TEST switch to FF Set the POWER switch to the off (down) position	
	i.	Terminate tracking of the target	
11	Select valid simultaneous track data samples.		
	a	Remove the printout from the computer printer/plotter	

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(17) Table 4-27 Monthly Simultaneous Tracking Checks—TTR, MTR, and TRR—Continued

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Step	Operation	Normal indication	Corrective procedure
11	<b>Continued</b>		
	b.	Discard any samples which meet the following criteria:	
		(1) TTR/TRR D (YDS) is less than 20,000 yards.	
		(2) TTR/TRR TAGC and MTR MAGC is less than 2.0 volts.	
		(3) TTR TRR and MTR E (MILS) is less than 25 mils above terrain and physical object masking. Use TTR TRR and MTR A (MILS) for azimuth angle determinations.	
12	<b>Evaluate the simultaneous track printout data</b>		
	a.	Note the DIFF (REF) value	
	b.	Note the TTR MTRC X (YDS), Y (YDS), and H (YDS) values.	
		Any coordinate indication which exceeds the DIFF (REF) value noted in a above is considered as an excessive error.	
			Refer to step 13 below
	c.	Note the STD DEV for A (MILS) and E (MILS)	
		Any STD DEV in excess of 0.4 mils is considered as an excessive error.	
			Refer to step 13 below
	d.	Note the STD DEV for D (YDS)	
		Any STD DEV in excess of 6 and 12 yards in the SHORT and LONG pulse modes, respectively, is considered an excessive error.	
			Refer to step 13 below
13	<b>Determine if the simultaneous tracking data samples are satisfactory.</b>		
	Any printout data sample which has one or more excessive errors should be considered an out-of-tolerance condition.		
	For each TTR and TRR operational mode, at least 80 percent of the data samples do not contain an excessive error(s).		
	Refer to the procedures in table 6-9.		
	<i>Note.</i> The balance of the data on the printout is used for troubleshooting purposes. Refer to table 6-9 for more information.		
14	<b>(Deleted)</b>		
15	<b>Deenergize the transmitters.</b>		
	a.	On the target track control power supply, rotate the HV SUPPLY knob to START and depress the HV SUPPLY OFF switch.	
	b.	On the missile track control power supply, rotate the HV SUPPLY knob to START and depress the HV SUPPLY OFF switch.	
	c.	On the countermeasures control indicator, rotate the MOD A HV and MOD B HV knobs fully counterclockwise. Depress the MAG A-HV and MAG B-HV switches.	

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*L, Table 4-27 Monthly Simultaneous Tracking Checks: TTR, MTR, and TRR—Continued***CONFIDENTIAL**

Step	Operation	Normal indication	Corrective procedure
16.	Reestablish the switch positions.		
a	On the target antenna control group, set the RANGE TRACK switch to TTK and the TEST switch to TEST		
b	On the countermeasures control-indicator, set the MAN-AUTO switch to AUTO		
c	On the missile error voltage monitor, set the BEACON-TARGET switch to BEACON		
d	Notify the computer operator that the checks have been completed		

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## CHAPTER 5 (C)

## NONPERIODIC CHECK PROCEDURES

(U), Table 5-1 Nonperiodic Target AFC Adjustments—TTR and MTR

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Step	Operation	Normal indication	Corrective procedure
1	Prepare for the TTR target AFC checks.		
	a.	Perform the procedures in table 2-1	
	b.	On the target track control power supply, set the switches as indicated	
		<i>Switch</i>	<i>Setting</i>
		AGC—MANUAL	AGC
		TTR PULSE WIDTH	SHORT
		IND	R
	c.	On the target antenna control group, set the switches as indicated	
		<i>Switch</i>	<i>Setting</i>
		TEST	TEST
		MULTI BIN	OFF
		RANGE TRACK	TTR
		AGC—LIN-LOG	AGC
	d.	Set the TTR range to approximately 20,000 yards.	
2.	Prepare for the MTR target AFC checks.		
	a.	Perform the procedures in table 2-1	
	b.	On the missile track control drawer, set the switches as indicated	
		<i>Switch</i>	<i>Setting</i>
		TEST	TEST
		DISABLE	down
		RANGE	NORMAL
	c.	On the missile track control power supply, set the AGC—MANUAL switch to AGC and the TUNE—SLEW switch to SLEW	
3	Perform the general preparations for the target AFC checks.		
	On the appropriate error voltage monitor, set the switches as indicated.		
		<i>Switch</i>	<i>Setting</i>
		(IF TEST)—ADJ	ADJ
		RCVR TEST	AFC
		PRESET	2
		BEACON—TARGET	TARGET
4	Check the alignment of the magnetron to the tuning drive.		
	a.	For the TTR, perform the procedures in table 4-2, step 3a through c	
	b.	For the MTR, perform the procedures in table 4-14, step 3a through c	

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(c) Table 5-1 Nonperiodic Target AFC Adjustments—TTR and MTR Continued

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Step	Operate on	Normal indication	Corrective procedure
5	Check the adjustment of the target AFC preset voltage		
a	On the appropriate track RF control-power supply	set the FREQUENCY DECREASE-INCREASE switch to DECREASE and operate the FREQUENCY TUNE switch to tune the magnetron to the low frequency stop.	
b	On the appropriate target AFC,	disconnect the coaxial cable from J14	
c	On the target AFC,	connect a voltmeter between +VTO MON (TP5) and VTO MON (TP6). Apply the positive lead of the voltmeter to +VTO MON	
		The voltmeter indicates between -1.2 and -2.0 volts.	
			On the appropriate RF control-power supply, adjust LOW END ADJUST variable resistor R9 for an indication of -1.6 volts.
			Refer to figure 49 (TTR) or 22 (MTR).
d	Tune the magnetron to the high frequency stop.	The voltmeter indicates between +7.4 and +8.2 volts.	
			On the appropriate RF control-power supply, adjust HIGH END ADJUST variable resistor R7 for an indication of 7.8 volts
			Refer to figure 49 (TTR) or 22 (MTR).
e	If either HIGH END ADJUST or LOW END ADJUST variable resistor was adjusted,	repeat a, c, and d above	
f	Tune the magnetron to a magnetron dial indication of 300		
g	Disconnect the voltmeter from + VTO MON and -VTO MON (TP5 and TP6)		
h	Reconnect the coaxial cable to J14		
6.	Check the TTR AFC crystal current.		
a	At the target track receiver transmitter,	set the XTAL SEL switch on the monitor panel to each position from CR9 through CR12	
		The XTAL CUR meter indicates a value between 40 and 100 $\mu$ a for each crystal. The indication varies due to the AFC sweep.	
			Adjust the variable attenuator on the mixer assembly for a minimum of 40 $\mu$ a for the crystal with the lowest indication. If an adjustment was made, repeat a above
			Refer to figure 49

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Table 5-1. Nonperiodic Target AFC Adjustments—TTR and MTR—Continued

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Step	Operation	Note or Indication	Corrective Requirement
6.	Continued		
	b Set the XTAL SEL switch to OFF		
	c On the antenna support base set the BLOWER switch to ON and the ANTENNA switch to NORMAL		
7	Check the MTR AFC crystal current.		
	a On the missile track receiver transmitter set the crystal current switch on the track amplifier-converter to CR1 and then to CR2		
	The XTAL CUR meter indicates a value between 0.8 and 2.0 ma for each crystal. The indication varies due to the AFC sweep.		
	In the mixer, adjust variable attenuator AT7 for a minimum indication of 0.8 for the crystal with the lowest indication. If an adjustment was made, repeat a above		
	Refer to figure 22.		
	b Set the crystal current switch to OFF.		
	c On the antenna support base set the BLOWER switch to ON and the ANTENNA switch to NORMAL		
8.	Perform the daily target AFC check procedures in table 2-6, steps 1 through 3 (TTR) or table 2-14, steps 1 through 3 (MTR).		
	Note: If the daily check requirements can be met, proceed to step 15 below. If problems still persist, proceed to step 9 below.		
9.	Reestablish the switch settings and magnetron frequency		
	a Verify the switch settings in steps 1 through 3 above. On the appropriate error voltage monitor, set the BEACON—TARGET switch to BEACON		
	b Verify that the magnetron is energized in the SHORT pulse mode (TTR) or BEACON mode (MTR)		
	c On the appropriate track antenna support base set the ANTENNA switch to DISABLE and the BLOWER switch to OFF		
	d Verify that the magnetron dial is set to 300.		
10.	Acquire the magnetron in the beacon mode.		
	a Set the MULTI BIN switch to ZERO (TTR) and the RANGE switch to ZERO (MTR)		
	b While observing the appropriate range indicator, slowly adjust the PRESET 2 control on the appropriate error voltage monitor counterclockwise from the maximum clockwise position until range zero pulses are visible on the indicator		
	c Set the range of the TTR to gate the fourth range zero pulse and set the range MAN—ACQUIRE AID—TRACK AID—AUTO switch to AUTO (TTR)		
	d Set the range of the MTR to gate the number 4 beacon transmitter pulse and set the range MAN—AID—AUTO switch to AUTO (MTR)		
	NOTE: By determining the 0.4 second time that the number 4 beacon transmitter has a 1 pulse width, the 0.4 second range of the pulse is obtained on the RANGE AND RANGE BEACON as a relative range reading.		

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(U) Table 5-1 Nonperiodic Target AFC Adjustments—TTR and MTR—Continued

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Step	Operation	Normal Indication	Corrective Procedure
10.	Continued		
	e. On the appropriate error voltage monitor, hold the AFC SENS switch to HI and observe the RCVR TEST meter. Adjust the PRESET 2 control for an indication of 50. Release the AFC SENS switch.		
*		Stable range zero pulses are visible on the range indicator (ITR). The number 2 transmitter pulse is stable and well defined (MTR).	Repeat b through e above.
11.	Check the target AFC IF lock-on channel.		
	With the beacon AFC locked on the appropriate signal, observe the target AFC LOCK indicator on the appropriate tracking antenna target AFC unit.		
	The AFC LOCK indicator is illuminated.		Refer to figure 22 (MTR) or 49 (TTR).
	<i>Note.</i> While performing the procedures in steps 12 and 13 below, the target AFC LOCK indicator must remain illuminated.		
12.	Check the dc balance.		
	a. On the target AFC, disconnect the coaxial cable from J6.		
	b. On the target AFC, connect a voltmeter between DC BAL (TP2) and GND (TP7). Connect the positive meter lead to DC BAL.		
		The voltmeter indicates between plus and minus 150 millivolts.	
			On the appropriate target AFC, adjust the OFFSET TRIM variable resistor for an indication as close to zero as possible.
			<i>Note.</i> The adjustment range of the OFFSET TRIM variable resistor is small, and zero may not be obtainable.
			Refer to figure 22 (MTR) or 49 (TTR).
	c. Reconnect the coaxial cable to J6.		
13.	Check the sample and hold delay adjustment.		
	a. On the target AFC unit, rotate the FREQ TRIM control 20 turns clockwise, then 10 turns counterclockwise. Rotate the S/H STROBE TRIM control 20 turns counterclockwise.		
	b. Verify that the voltmeter is connected between DC BAL (TP2) and GND (TP7).		
	c. While observing the voltmeter, manually tune the magnetron to increase the frequency until the voltmeter indication is approximately +8 volts.		

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(U) Table 5-1 Nonperiodic Target AFC Adjustments—TTR and MTR—Continued

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Step	Operation	Normal indication	Corrective procedure
13.	Continued		
d	Adjust the S/H STROBE TRIM control clockwise until the first positive maximum indication is obtained on the voltmeter. (The first maximum may occur at the initial position of the S/H STROBE TRIM control.) If the voltage indication exceeds +4.5 volts, tune the magnetron to obtain an indication of approximately +3 volts and continue the S/H STROBE TRIM adjustment.		
e	Manually tune the magnetron to 300 and repeat step 10e above.		
f	While observing the voltmeter, adjust the S/H STROBE TRIM control to obtain an indication of 0 volts.		
g	While observing the voltmeter, manually tune the magnetron to increase the frequency, then to decrease the frequency.		
		The maximum positive indication is at least +4 volts.	
		The maximum negative indication is at least -4 volts.	
		Repeat step 13.	
			Refer to figure 22 (MTR) or 49 (TTR).
h	Remove the voltmeter leads from DC BAL (TP2) and GND (TP1).		
i	Manually tune the magnetron to a dial indication of 300. Reconnect the tuning drive cable to the tuning drive.		
j	On the antenna support base, set the BLOWER switch to ON and the ANTENNA switch to NORMAL.		
k	Tune the magnetron to the assigned operating frequency. If no frequency is assigned, tune the magnetron frequency to midband (TTR).		
l	Tune the magnetron to the assigned cavity frequency (MTR).		
14.	Check the AFC lock-on of the target AFC.		
	On the appropriate error voltage monitor, set the BEACON—TARGET switch to TARGET.		
		The error voltage monitor TARGET AFC LOCK indicator illuminates.	
			Refer to figure 22 (MTR) or 49 (TTR).
15.	Check the discriminator center frequency.		
a	With the following two exceptions, verify the switch settings in steps 1 and 2. Set the MULTI BIN switch to ZERO (TTR) or the RANGE switch to ZERO (MTR).		
b	On the appropriate error voltage monitor, verify that the switches are set as indicated.		
	Switch	Setting	
	(IF TEST)—ADJ	ADJ	
	RCVR TEST	AFC	
	BEACON—TARGET	TARGET	

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1) Table 5-1 Nonperiodic Target AFC Adjustments: TTR and MTR Continued

**UNCLASSIFIED**

Step	Operation	Normal indication	Corrective procedure
15.	Continued		
c	Energize the TTR magnetron in the LONG pulse mode or the MTR magnetron in the TARGET mode	Range zero pulses are present on the appropriate range indicator	Repeat a, b, and c above.
d	Set the range to gate the fourth zero pulse	Set the appropriate range channel into the AUTO mode	The fourth range zero pulse is locked in the AUTO mode. Repeat d above.
e	On the appropriate error voltage monitor, observe the RCVR TEST meter	With the AFC SENS switch in the HI position, the RCVR TEST meter indicates between 40 and 60 (TTR). With the AFC SENS switch in the LOW position, the RCVR TEST meter indicates between 40 and 60 (MTR).	(1) On the appropriate track antenna support base, set the ANTENNA switch to DISABLE and the BLOWER switch to OFF (2) On the target AFC, adjust the FREQ TRIM variable resistor. If the adjustment range is insufficient, perform the procedures in steps 9 through 13 and step 15 above. Refer to figure 22 (MTR) or 49 (TTR).
16.	Reestablish the antenna support base switch positions.	On the appropriate track antenna support base, set the BLOWER switch to ON and the ANTENNA switch to NORMAL.	
17.	Return the TTR to normal operation.		
a	On the target antenna control group, set the MULTI BIN switch to OFF and the MAN-ACQUIRE AID-TRACK AID-AUTO switch to MAN		
b	On the target track control-power supply, rotate the HV SUPPLY knob to START and depress the HV SUPPLY-OFF switch.		
c	On the target error voltage monitor, set the RCVR TEST switch to BIAS and the PRESET switch to 1.		
18.	Return the MTR to normal operation.		
a	On the missile track control drawer, set the RANGE switch to NORMAL and the range MAN-AID-AUTO switch to MAN.		

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*U, Table 5-1 Nonperiodic Target AFC Adjustments—TTR and MTR—Continued***UNCLASSIFIED**

Step	Operation	Normal indication	Corrective procedure
18.	Continued		
	b	On the missile track control-power supply, rotate the HV SUPPLY knob to START and depress the HV SUPPLY—OFF switch.	
	c	On the missile error voltage monitor, set the RCVR TEST switch to BIAS, the PRE-SET switch to 1, and the BEACON TARGET switch to BEACON	

*(U, Table 5-2. Nonperiodic Beacon AFC Adjustments—TTR and MTR***UNCLASSIFIED**

Step	Operation	Normal indication	Corrective procedure
1.	Prepare for the TTR beacon AFC checks.		
	a.	Perform the procedures in table 2-1.	
	b.	On the target antenna control group, set the TEST switch to TEST	
	c.	On the target track control power supply, set the AGC—MANUAL switch to AGC and the TTR PULSE WIDTH switch to SHORT	
2.	Prepare for the MTR beacon AFC checks.		
	a.	Perform the procedures in table 2-1	
	b.	On the missile track control drawer, set the TEST switch to TEST and the DISABLE switch to the down position	
	c.	On the missile track control-power supply, set the AGC—MANUAL switch to AGC	
3.	Perform the general preparations for the beacon AFC checks		
	a.	On the appropriate IF test generator, set the switches as indicated	
		<i>Switch</i>	<i>Setting</i>
		OSC	ON
		MODE	PULSE
		SLEW RATE	OFF
		PULSE WIDTH	SHORT
		0—90 dB ATTENUATOR	30
		0—9 dB ATTENUATOR	0
		Momentarily operate the RANGE PRE-SET switch.	
	b.	On the appropriate error voltage monitor, set the switches as indicated	
		<i>Switch</i>	<i>Setting</i>
		(IF TEST)—ADJ	ADJ
		RCVR TEST	AFC
		PRESET	2
		BEACON—TARGET	TARGET

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(U) Table 5-2. Nonperiodic Beacon AFC Adjustments—TTR and MTR—Continued

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Step	Operation	Normal indication	Corrective procedure
3	Continued		
	c. Operate the SWEEP PRESET switch.	The SWP CENTER indicator is illuminated.	Refer to figure 23 (MTR) or 50 (TTR)
4.	Check the sample and hold delay adjustment.		
	a. Rotate the appropriate range handwheel to gate the IF test pulse		
	b. Set the appropriate range channel to AUTO		
	c. On the appropriate IF test generator, adjust the COARSE IF FREQ ADJUST control to 1.		
	d. On the appropriate beacon AFC, adjust the S/H DELAY variable resistor 20 turns clockwise, and then counterclockwise to obtain a minimum indication on the RCVR TEST meter. The minimum indication may occur at the initial setting of the S/H DELAY control.		
	<i>Note.</i> The RCVR TEST meter indication should be below 30. It may be necessary to adjust the COARSE IF FREQ ADJUST control to obtain an on-scale indication.		
	e. Adjust the COARSE IF FREQ ADJUST control to obtain a RCVR TEST meter indication of 20.		
	f. Adjust beacon AFC S/H DELAY counterclockwise to obtain a meter indication of 22.		
5.	Check the dc balance		
	a. On the appropriate beacon AFC, disconnect the coaxial cable from J4 (adjacent to NOISE BAL).		
	b. Terminate J4 with a 50-ohm termination. The termination used on MTR signal divider HY1-3 can be used.		
	c. Using a voltmeter, monitor the dc voltage on the beacon AFC unit between TP2 (DC BAL) and TP7 (GND).		
	The voltage is between plus and minus 150 millivolts.		
			On the appropriate beacon AFC, adjust the DC OFFSET variable resistor for an indication as close to zero as possible.
			<i>Note.</i> The adjustment range of the DC OFFSET variable resistor is small, and zero volts may not be obtainable.
6.	Check the dc amplifier gain		
	a. Using a voltmeter, monitor the dc voltage on the beacon AFC unit between TP4 (TEST OUT) and TP7 (GND). Apply the positive lead of the voltmeter to TP4.		
	b. On the appropriate error voltage monitor, adjust the PRESET 2 control to obtain a voltmeter indication of -1 volt.		
	c. On the beacon AFC unit, measure the dc voltage between TP5 (VTO MON -) and TP6 (VTO MON +). Apply the positive lead of the voltmeter to TP6.		

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(U) Table 5-2 Nonperiodic Beacon AFC Adjustments- TTR and MTR-Continued

**UNCLASSIFIED**

Step	Operation	Normal indication	Corrective procedure
6.	Continued	The voltmeter indicates between +9 and +11 volts.	Refer to figure 23 (MTR) or 50 (TTR)
	d. Leave the voltmeter leads connected		
7.	Check the local oscillator (VTO) tuning voltage.		
	a. Adjust the PRESET 2 control fully counterclockwise.	The voltmeter indicates +1.0 volt or less (the indication may be negative).	Check appropriate + or -75-volt power supply
	b. Adjust the PRESET 2 control fully clockwise.	The voltmeter indicates at least +95 volts.	Check appropriate + or -75-volt power supply.
	c. Disconnect the voltmeter leads.		
8.	Reestablish the system configuration.		
	a. Remove the 50-ohm termination added in step 5b above. If the HY1 termination was used, install the termination on HY1-3.		
	b. Reconnect the coaxial cable, disconnected in step 5a above, to J4.		
	c. Set the appropriate range switch to MAN.		
	d. Set the PRESET switch to 1.		
9.	Perform the monthly beacon AFC check procedures in table 4-4 (TTR) or table 4-16 (MTR).		

(U) Table 5-3 Nonperiodic Monopulse Receiver Adjustments- TTR and MTR

**UNCLASSIFIED**

Step	Operation	Normal indication	Corrective procedure
1.	Prepare the TTR for the monopulse receiver checks.		
	Perform the procedures in table 4-6, step 1.		
2.	Prepare the MTR for the monopulse receiver checks.		
	Perform the procedures in table 4-16, step 1.		
3.	Prepare the TTR and MTR IF test generators.		
	a. Set the switches as indicated.		
		Switch	Setting
		OSC	ON
		MODE	CW
		PULSE WIDTH	SHORT
		SLEW RATE	OFF
		0-90 dB ATTENUATOR	30
		0-9 dB ATTENUATOR	0

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1. Table 5. Nonperiodic Menu-pulse Receiver Adjustments: TTR and MTR. Continued

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Step	Operation	Normal indication	Corrective procedure
3.	Continued		
	b	Momentarily depress the RANGE PRE-SET switch	
	c	On the appropriate IF test generator, adjust the FINE and COARSE IF FREQ ADJUST controls for maximum indication on the error voltage monitor RCVR TEST meter	
	Note: For the remainder of this table, all switches, controls, and meters are located on the error voltage monitors unless otherwise indicated.		
4.	Check the insertion loss difference between the TTR long pulse and short pulse filters.		
	a	To check the sum channel, set the (IF TEST)-ADM switch to (IF TEST) and the RCVR TEST switch to (SUM).	
	b	Hold the REMOTE-LOCAL switch to LOCAL and adjust the MAN GAIN control to obtain an indication of 50 on the RCVR TEST meter.	
	c	On the target track control-power supply, set the TTR PULSE WIDTH switch to SHORT	
	d	On the IF test generator, adjust the ATTENUATOR switches to obtain an indication as close to 50 as possible on the RCVR TEST meter	
	The IF test generator ATTENUATOR switches indicate between 19 and 23 db		Refer to figures 17 and 48.
	e.	Release the REMOTE-LOCAL switch.	
	f	On the target track control-power supply, set the TTR PULSE WIDTH switch to LONG	
	g	On the IF test generator, set the ATTENUATOR switches to 30 db	
	h	To check the elevation channel, set the RCVR TEST switch to (EL) and repeat b through g above.	
	i	To check the azimuth channel, set the RCVR TEST switch to (AZ) and repeat b through g above.	
5.	Check the MTR and TTR sum video levels.		
	a.	Using a T-connector (UG-274 or equivalent), connect the vertical input of an oscilloscope to J3 (SUM VIDEO) of the appropriate IF distribution and AGC control. Do not terminate the oscilloscope input. Sync the oscilloscope, as required, with the TTR or MTR preknock	
	Note: The TTR and MTR preknock pulses are available on the signal distribution pane in the radar set group. The TTR preknock is available at J49E and the MTR preknock at J43E.		
	b	On the appropriate IF test generator, set the MODE switch to PULSE. For the TTR, set the PULSE WIDTH switch to LONG.	
	c.	Rotate the appropriate range handwheel to gate the IF test pulse in the range notch	
	d	On the IF test generator, adjust the RANGE TRIM control to center the test pulse in the AGC gate to obtain minimum pulse amplitude on the oscilloscope	

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(U, Table 5-3 Nonperiodic Monopulse Receiver Adjustments—TTR and MTR—Continued)

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Step	Operation	Normal indication	Corrective procedure
5	Continued	The amplitude of the observed video pulse on the oscilloscope is between 2 and 3 volts.	On the appropriate IF distribution and AGC control, adjust the VIDEO GAIN variable resistor to obtain a pulse amplitude of 2.5 volts. Refer to figure 17 (MTR) or 48 (TTR)
e	On the appropriate IF test generator, set the OSC switch to OFF and the 0-90 dB ATTENUATOR switch to 90 dB		
f	Disconnect the oscilloscope. Reconnect the coaxial cable to J3 (SUM VIDEO)		
6	Check the noise power from the antenna and noise power gain within the radar set group.		
a	On the appropriate IF test generator, verify that the OSC switch is set to OFF, on the appropriate error voltage monitor, set the RCVR TEST switch to (SUM), and if testing the MTR, set the (IF TEST)—ADJ switch to (IF TEST). Verify that the radar test set is not selected.		
b	On the target track control-power supply, set the TTR PULSE WIDTH switch to SHORT		
c	To check the sum channel, on the appropriate track IF attenuator, disconnect the cable from SUM-J1 IN		
d	On the appropriate error voltage monitor, rotate the MAN GAIN control fully clockwise. Hold the REMOTE-LOCAL switch to LOCAL.	The RCVR TEST meter indicates at least 10.	(1) Verify the settings of the (IF TEST)—ADJ and RCVR TEST switches. (2) Check the loss of IF gain in the IF chain in the radar set group. Refer to figure 48 (TTR) or figure 17 (MTR)
e	Release the REMOTE-LOCAL switch		
f	Reconnect the cable disconnected in c above.		
g	Hold the REMOTE-LOCAL switch to LOCAL and adjust the MAN GAIN control to obtain an indication of 50 on the RCVR TEST meter		
h	On the appropriate track IF attenuator, disconnect the cable from SUM-J1 IN	The RCVR TEST meter indicates less than 30.	Check the antenna for loss of gain. Refer to figure 17 (MTR) or 48 (TTR).

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Table 3 Nonperiodic Monopulse Receiver Adjustments—TTR and MTR—Continued

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Step	Operation	Normal indication	Corrective procedure
6.	Continued		
	i. Release the REMOTE-LOCAL switch		
	j. Reconnect the cable disconnected in h above		
	k. To check the elevation channel, set the RCVR TEST switch to (EL) and repeat c through j above, substituting EL-J5 IN for SUM-J1 IN		
	l. To check the azimuth channel, set the RCVR TEST switch to (AZ) and repeat c through j above, substituting AZ-J3 IN for SUM-J1 IN		
	m. Set the TTR PULSE WIDTH switch to LONG.		
7	Check the gain settings of the sum, azimuth, and elevation system IF channels		
	a. Check the gain setting of the sum IF amplifier by performing the procedures in table 4-6, steps 1 and 2 (TTR) or table 4-16, steps 1 and 2 (MTR)		
	b. Acquire the radar test set in the CW mode by performing the procedures in table 2-7, steps 1 through 2g and step 2i through n (TTR), table 2-15, steps 1 through 2e and step 2i through k (MTR).		
	c. On the target test control (TTR) or MTR control indicator group, set the radar test set SIGNAL LEVEL switch to 20.		
	d. On the appropriate error voltage monitor, set the RCVR TEST switch to (SUM) and the (IF TEST)-ADJ switch to (IF TEST).		
	e. Verify that the radar antenna is set to the coordinates of the radar test set. Hold the REMOTE-LOCAL switch to LOCAL and adjust the MAN GAIN control to obtain an indication of 100 on the RCVR TEST meter.		
	f. Set the RCVR TEST switch to (EL).		
	g. Increase the antenna elevation to obtain the maximum indication on the RCVR TEST meter.		
	The RCVR TEST meter indicates between 40 and 60.		
			(1) On the appropriate elevation main IF amplifier, adjust the GAIN ADJ variable resistor to obtain an indication of 50 on the meter
			(2) Perform the procedures in table 2-10 (TTR) or table 2-19 (MTR).
			(3) Perform the procedures in table 2-9 (TTR) or table 2-17 (MTR)
			Refer to figure 17 (MTR) or 48 (TTR).
	h. Release the REMOTE-LOCAL switch.		
	i. To check the azimuth channel, repeat the procedures in d through h above, substituting (AZ) for (EL) and azimuth for elevation		
8	Reestablish the switch positions.		
	a. On the target track control-power supply, set the TTR PULSE WIDTH switch to LONG		

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(U) Table 5-3. Nonperiodic Monopulse Receiver Adjustments: TTR and MTR Continues

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Step	Operation	Normal indication	Corrective procedure
8.	Continued		
	b. On the target test control, set the SIGNAL LEVEL switch to 70		
	c. On the missile control, indicator group, set the TARGET STANDBY MISSILE switch to STANDBY and the SIGNAL LEVEL switch to 70		
	d. On the error voltage monitors, set the (IF TEST) ADJ switches to ADJ		

(L) Table 5-4. Nonperiodic Computed Receiver Sensitivity Figure Check—TTR

**UNCLASSIFIED**

Step	Operation	Normal indication	Corrective procedure
	<p><i>Note:</i> To measure the TTR receiver performance (table 2-9, Daily Monopulse Receiver Checks), requires the measurement of receiver sensitivity. For a given radar site, a minimum number must be established which is primarily dependent on site conditions. This table provides the method for establishing the computed receiver sensitivity figure.</p> <p><i>Note:</i> To obtain an accurate computed number, steps 1 and 2 below must be performed with care and in immediate succession.</p>		
1	Measure the RF power transmitted in the long pulse mode.		
	a. On the target track control power supply, tune the magnetron frequency to midband		
	b. On the TTR antenna support base, set the ANTENNA switch to DISABLE and the BLOWER switch to OFF		
	c. Perform the procedures in table 3-3, steps 4, 5, and 7a through c. Measure the RF power only at midband.		
	<p><i>Note:</i> If the meter indication obtained in table 3-3, step 7b is beyond zero (to the right), adjust the HV SUPPLY control on the target track control power supply to reduce the magnetron current (obtain an on-scale indication). Repeat the procedures in table 3-3, step 7b and c. Record the final dB value obtained in table 3-3, step 7c.</p> <p><i>Note:</i> The magnetron current used to measure the RF power must be carefully noted and maintained when performing steps 1d and 2 below.</p>		
2	Measure the RF power received at the radar test set.		
	a. Position the TTR antenna to the coordinates of the radar test set		
	b. On the radar test set, set the FUNCTION switch to LOCAL and the METER switch to 0.		
	<p><i>Note:</i> The following procedure assumes that the RF POWER dB meter has been calibrated (refer to table 4-3, step 2).</p>		
	c. Observe and record the indication on the radar test set RF POWER dB meter		

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c. above 5.4. Nonperiodic Monopulse Receiver Overload Adjustments—TTR (Continued)

**UNCLASSIFIED**

Step	Operation	Normal indication	Corrective procedure
2	Continued		
		The RF POWER dB meter indication is between 0 and 6.	If the meter indicates beyond 0, reduce the magnetron current and RF power to obtain an on-scale indication on the target track control-power supply. Repeat steps 1b through 2c above.
3	Compute the receiver sensitivity figure		
a	Subtract the radar test set RF POWER dB meter indication obtained in step 2c above from the TTR final db value obtained in step 1c above.		
b	Algebraically add 55 to the result obtained in a above. The resultant number is the TTR computed receiver sensitivity figure. Record this number for future use.		
4	Deenergize the TTR transmitter.		
	Rotate the HV SUPPLY knob to START and depress the HV SUPPLY OFF switch.		
5	Condition the radar test set for remote operation.		
	Set the FUNCTION switch to RMT.		

(U) Table 5-5. Nonperiodic Monopulse Receiver Overload Adjustments—TTR

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Step	Operation	Normal indication	Corrective procedure
1	Acquire the radar test set in the short pulse, CW mode		
a	Perform the procedures in table 2-7, steps 1 through 2g.		
b	On the target error voltage monitor, set the RCVR TEST switch to AFC and adjust the PRESET 1 control to obtain an indication between 45 and 55 on the RCVR TEST meter.		
c	Hold the AFC switch in the HI position and slowly adjust the FINE control for an indication of 50 on the RCVR TEST meter. Release the switch.		
d	On the target test control, set the SIGNAL LEVEL switch to 20.		
2	Perform the receiver overload adjustment.		
a	While observing the AZ ANGLE ERROR and EL ANGLE ERROR meters on the target error voltage monitor, position the antenna coordinates to obtain an indication of approximately +5 mils on each meter.		
b	On the target IF distribution and AGC control, rotate the OVERLOAD ADJ control counterclockwise at least 10 turns.		
c	Note the indication on the target tracking console TARGET SIGNAL STRENGTH meter.		

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*Table 5-5. Nonperiodic Missile Receiver Overload Adjustments TTR-Continued*

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Step	Operation	Normal indication	Corrective procedure
2.	<b>Continued</b>		
d	On the target track control power supply, set the AGC-MANUAL switch to MANUAL, and adjust the receiver GAIN control for the same meter indication noted in c above.		
e	Set the SIGNAL LEVEL switch to 10.		
f	On the IF distribution and AGC control, slowly adjust the OVERLOAD ADJ variable resistor clockwise until the indications on the AZ and EL ANGLE ERROR meters indicate just less than +3 mls. Do not overadjust.		
g	Set the SIGNAL LEVEL switch to 11.	The AZ and EL ANGLE ERROR meters indicate +3 mls or greater.	Repeat the procedures in step 2. Refer to figure 48.
h	Set the SIGNAL LEVEL switch to 09.	The AZ and EL ANGLE ERROR meters indicate +3 mls or less.	Repeat the procedures in step 2. Refer to figure 48.
3.	<b>Reestablish the switch positions.</b>		
a	Set the SIGNAL LEVEL switch to 70.		
b	On the missile control-indicator group, set the TARGET STANDBY MISSILE switch to STANDBY.		
c	On the target error voltage monitor, set the RCVR TEST switch to BIAS.		
d	On the target track control power supply, set the AGC-MANUAL switch to AGC.		

*Table 5-6. Nonperiodic Receiver Sensitivity Double Pulse Adjustments TTR and MTR*

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Step	Operation	Normal indication	Corrective procedure
	<p>Note: Do not perform the procedures in this table unless the appropriate receiver sensitivity is greater than 40.</p> <p>Note: While performing the procedures in this table, insure that the antenna is always positioned to the coordinates of the radar test set.</p>		
1.	<b>Acquire the radar test set with the MTR.</b>		
	Perform the procedures in table 2-15, steps 1 and 2.		
2.	<b>Check the initial level of the radar test set double pulse.</b>		
a	Note the MTR range indication.		
b	On the missile track control drawer, set the DISABLE switch to the down position.		
	On the range indicator, a stable radar test signal is centered in the range notch.		
	Repeat step 1 above.		

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(U) Table 5-6 Nonperiodic Receiver Sensitivity Double Pulse Adjustments—TTR and MTR—Continued

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Step	Operation	Normal condition	Corrective procedure
2	Continued		
	c. On the missile control-indicator group, set the PULSES switch to DOUBLE and the SIGNAL LEVEL switch to 70		
	A single pulse above noise level is present at the right of the sweep expansion pulse		<p>(1) Very slowly, vary the MTR range approximately 300 yards above and below the range noted in a above.</p> <p>(2) On the radar test set subassembly, adjust variable resistor R4 fully counterclockwise</p> <p>Refer to figure 93</p> <p>Refer to figure 23</p>
	d. Slightly vary the MTR range to observe the most stable pulse		
3.	Check the delay of the second radar test set pulse.		
	Set the MTR range to the value noted in step 2a above.		
	A stable, single pulse appears at the right of the sweep expansion pulse		<p>On the radar test set control in the missile control-indicator group, disconnect the power cable from J7. Remove board A2, and reinstall the board using the extender board. Reconnect the cable to J7. Slowly adjust variable resistor R60 to obtain the most stable pulse. Disconnect the power cable from J7, and replace board A2 without the extender board. Reconnect J7</p>
4	Check the amplitude of the second radar test set pulse.		
	a. Set the SIGNAL LEVEL switch to 30		
	A stable, single pulse appears in the range notch.		<p>Repeat step 1 above. Verify that the DISABLE switch is set to the down position.</p> <p>Refer to figure 93.</p>
	b. Set the SIGNAL LEVEL switch to 40		
	One pulse remains centered in the range notch.		Adjust the MTR range.

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1. Table 5-6. Nonperiodic Receiver Sensitivity Double Pulse Adjustments—TTR and MTR. Continued.

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Step	Operation	Normal Indication	Corrective procedure
4.	Continued	A second pulse appears to the right of the sweep expansion pulse. The pulse amplitude is at least equal to that of the first pulse but not more than 1/8 inch greater than the amplitude of the first pulse. Disregard the range notch depth.	On the radar test set subassembly, adjust variable resistor R4 to set the second pulse amplitude approximately 1/16 inch greater than the amplitude of the first pulse.
	c. Set the SIGNAL LEVEL switch to 70 and the PULSES switch to SINGLE		
5.	Acquire the radar test set with the TTR in the short pulse mode		
	a. Perform the procedures in table 2-7, steps 1 and 2.		
	b. Note the TTR range indication.		
6.	Check the beacon gate delay adjustment of the TTR beacon AFC		
	a. On the target test control, set the PULSES switch to DOUBLE and the SIGNAL LEVEL switch to 30		
	b. On the target antenna control group, set the range MAN ACQUIRE AID-TRACK AID-AUTO switch to MAN		
		On the upper sweep of the range indicator, a single, stable pulse appears in the range notch.	Repeat step 5 above.
		The TTR RSPU range indication is equal to the range noted in step 5b above.	Reset the TTR range.
	c. Set the SIGNAL LEVEL switch to 40.		
		A second stable pulse appears to the right of the sweep expansion pulse	Loosen the holddown screws for the TTR beacon AFC. Carefully remove the AFC unit to gain access to the underside (mounting side). Locate the hole in the chassis between FL2 and FL3. Within the hole, locate variable resistor R47. Slowly adjust R47 to provide the most stable pulse. Reinstall the AFC unit and tighten the holddown screws.
			Refer to figure 50

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(U) Table 5-6. Nonperiodic Receiver Sensitivity Double Pulse Adjustments—TTR and MTR—Continued

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Step	Operation	Normal indication	Corrective procedure
7.	<b>Reestablish the switch positions.</b>		
	a	On the target test control, set the SIGNAL LEVEL switch to 70 and the PULSES switch to SINGLE	
	b	On the target antenna control group, set the MULTI BIN switch to OFF	
	c	On the missile control indicator group, set the TARGET STANDBY—MISSILE switch to STANDBY	

(U) Table 5-7. Nonperiodic Pulse Mode Range Shift Adjustments—TTR

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Step	Operation	Normal indication	Corrective procedure
1.	<b>Prepare for the pulse mode range shift adjustments.</b>		
	Perform the daily range system check procedures in table 2-8, steps 1 and 3		
2.	<b>Verify the switch positions.</b>		
	a	Verify that the TTR PULSE WIDTH switch is set to SHORT	
	b	Verify that the MP mode is not selected.	
	c	Set the MULTI BIN switch to ZERO	
3.	<b>Center the adjustment range of the MP short pulse range zero delay.</b>		
	a	On the target antenna control group, momentarily depress the MP switch	
		On the pulse generator-indicator, the MP—ON indicator is illuminated.	
			Perform the procedures in table 2-5
		Range zero pulses are present on the indicators.	
			Perform the procedures in table 2-6.
	b	Set the TTR range to gate the first range zero pulse	
	c	On the target antenna control group, set the range MAN—ACQUIRE AID—TRACK AID—AUTO switch to AUTO	
	d	On the pulse generator indicator preknock generator, adjust variable resistor R2 clockwise until the TTR range stops changing.	
	e	Adjust variable resistor R2 counterclockwise to increase the range approximately 200 yards. Record the TTR range indication	
	f	Momentarily depress the MP switch	
	g	Set the MAN—ACQUIRE AID—TRACK AID—AUTO switch to MAN	
4.	<b>Check the synchronizer short pulse range zero delay</b>		
	a	Set the TTR range to gate the first range zero pulse.	
	b	Set the MAN—ACQUIRE AID—TRACK AID—AUTO switch to AUTO	

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11, Table 5-7 Nonperiodic Pulse Mode Range Shift Adjustments—TTR—Continued

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Step	Operation	Navigation	Control Reference
4.	Continued		
	The TTR range is equal to the range recorded in step 3c above.		
			On the track system zero, adjust SYNC DELAY SHORT PULSE variable resistor R52
c.	Set the MAN ACQUIRE AID TRACK AID AUTO switch to MAN		
d.	Proceed to step 5f below		
5.	Adjust the long pulse range zero delay.		
a.	Verify that the TTR PULSE WIDTH switch is set to SHORT		
b.	Set the TTR range to gate the first range zero pulse		
c.	Set the MAN ACQUIRE AID TRACK AID AUTO switch to AUTO		
d.	Record the TTR range indication		
e.	Set the MAN ACQUIRE AID TRACK AID AUTO switch to MAN		
f.	Set the TTR PULSE WIDTH switch to LONG		
g.	Set the TTR range to gate the first range zero pulse		
h.	Set the MAN ACQUIRE AID TRACK AID AUTO switch to AUTO		
	The TTR range equals the value recorded in either step 3e or a above, depending on which step was performed last.		
			Set the desired range into the TTR RSPU using the LONG PULSE DELAY switches.
i.	Set the TTR PULSE WIDTH switch to SHORT. Verify that the first range zero pulse is still acquired		
j.	Set the range MAN ACQUIRE AID TRACK AID AUTO switch to MAN		
k.	Set the TTR PULSE WIDTH switch to LONG		
	The TTR range changes less than 15 yards.		
			Record the TTR range indication and proceed to m below.
l.	Proceed to step 6 below		
m.	Set the range MAN ACQUIRE AID TRACK AID AUTO switch to AUTO		
n.	On the track synchronizer, adjust SYNC DELAY LONG PULSE variable resistor R21 to obtain the value recorded in k above. If the adjustment range is insufficient, set the TTR PULSE WIDTH switch to SHORT and perform steps 3 through 5 above		
o.	On the TTR RSPU, use the LONG PULSE DELAY switches to set the range to the value used in h above		
p.	Repeat step 5.		
6.	Recheck the TTR range zero.		
	Note: Perform this step only if any adjustments were made in steps 3 through 5 above.		
a.	Set the TTR PULSE WIDTH switch to SHORT and the MULT. BIN switch to OFF		
b.	Perform the daily range system check procedures in table 2-8 steps 4 through 14		

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(U) Table 5-8. Nonperiodic Gate and Sweep Generator Board Adjustments—TTR

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Step	Operation	Normal indication	Corrective procedure	
1.	Prepare for the gate and sweep generator board adjustments.			
a	On the TTR RSPL front panel, set the MODE switch to OPR			
b	Connect a test cable between the TRACK RANGE MARK test jack on the TTR RSPL front panel and the external sync input on a dual trace oscilloscope			
c	On the range rear power control indicator, verify that the TEST—OPERATE switch is set to OPERATE			
d	On the target track control power supply, set the TTR PULSE WIDTH switch and the TRR PULSE WIDTH switch to SHORT			
2	Perform the gate and sweep generator board adjustments.			
a.	Using the oscilloscope, measure the delays and pulse widths listed below			
	Measure between	Width	Delay	
	A29TP13—A31TP3		1.2 $\mu$ s	Adjust variable resistor R1 on A31
	—A31TP8	.6 $\mu$ s		Adjust variable resistor R2 on A31.
	A29TP13—A31TP2		1.2 $\mu$ s	
	—A31TP2	.6 $\mu$ s		
	A29TP13—A31TP5		1.3 $\mu$ s	Adjust variable resistor R4 on A31
	—A31TP5	.4 $\mu$ s		Adjust variable resistor R3 on A31.
	—A31TP4	.2 $\mu$ s		Adjust variable resistor R5 on A31
	—A31TP6	.2 $\mu$ s		Adjust variable resistor R7 on A31.
	Refer to figure 52.			
b	On the target track control power supply, set the TTR PULSE WIDTH and the TRR PULSE WIDTH switch to LONG			
c	Using the oscilloscope, measure the delays and pulse widths listed below.			
	Measure between	Width	Delay	
	A29TP15—A31TP3		10.7 $\mu$ s	Adjust variable resistor R9 on A31
	—A31TP3	6.0 $\mu$ s		Adjust variable resistor R8 on A31
	A29TP15—A31TP2		10.7 $\mu$ s	
	—A31TP2	6.0 $\mu$ s		
	A29TP15—A31TP6		14.3 $\mu$ s	Adjust variable resistor R6 on A31
	Refer to figure 52			
3.	Disconnect the oscilloscope and test cable.			

(U) Table 5-9. Nonperiodic RSPU 5 Volt Adjustment

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Step	Operation	Normal indication	Corrective procedure
1	Prepare the TTR/MTR for the nonperiodic 5-volt adjustment. Perform the procedures in table 2-1.		

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(U, Table 5-9. Nonperiodic RSPU 5-Volt Adjustment—Continued

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Step	Operation	Normal indication	Corrective procedure
2.	Perform the RSPU 5-volt adjustment.		
	<i>Note</i> The controls and indicators in step 2 are located on the RSPU front panel unless otherwise indicated.		
	a. Set the MODE switch to MNL.		
	b. Set the MICROPROCESSOR SELECT switch to PCS.		
	c. Set the TEST ADDRESS thumbwheel switches to A002.		
	d. Set the DATA toggle switches to hexadecimal 20.		
		7 DOWN      3 DOWN	
		6 DOWN      2 DOWN	
		5 UP        1 DOWN	
		4 DOWN      0 DOWN	
	e. Depress the WRITE DATA pushbutton.		
	f. Set the TEST ADDRESS thumbwheel switches to A400.		
	g. Set the DATA toggle switches to hexadecimal FF		
		7 UP        3 UP	
		6 UP        2 UP	
		5 UP        1 UP	
		4 UP        0 UP	
	h. Depress the WRITE DATA pushbutton.		
	i. Set the TEST ADDRESS thumbwheel switches to A401.		
	j. Set the DATA toggle switches to hexadecimal 07.		
		7 DOWN      3 DOWN	
		6 DOWN      2 UP	
		5 DOWN      1 UP	
		4 DOWN      0 UP	
	k. Depress the WRITE DATA pushbutton.		
	l. On the RSPU, connect a multimeter between TP1 on analog I/O board A14 and ground. Select a dc voltage range of at least 10 vdc. Set the RSPU DC SELECT switch to +5V.		
	The meter reading is approximately 5 vdc.		
	Adjust variable resistor R1 on analog I/O board A14		
	m. Disconnect the multimeter and select the maximum current range.		
	n. Connect the multimeter positive (+) lead to TP1 on the analog I/O board.		
	o. Connect the multimeter negative (-) lead to the red (+) test point on the RSPU front panel.		
	p. Connect a test lead from the black (-) test point on the RSPU front panel to TP6 (GND) on the analog I/O board.		
	<i>Note</i> The +5-volt power supply is in the left side of the base section of the RSPU front panel.		

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(U) Table 5-9. Nonperiodic RSPU 5-Volt Adjustment-Continued

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Step	Operation	Normal indication	Corrective procedure
2.	Continued		
	q	Reduce the current range in steps while adjusting the +5-volt supply, as required, to obtain a null on the lowest current range.	
	r.	Select the maximum current range on the multimeter	
3.	Perform the indicator 5-volt adjustment.		
	a.	Disconnect the leads from the red (+) and black ( ) test points on the RSPU front panel.	
	b.	Connect the test lead from TP6 on the analog I/O board to TP7 on the single 6-digit display board on the range indicator.	
	c.	Connect the negative lead of the multimeter to the positive side of capacitor C9 on the single 6-digit display board.	
	<p><i>Note.</i> The +5-volt indicator power supply is located in the TTR radar control console above the elevation indicator in the rear of the cabinet. The MTR +5-volt power supply is located on the center-left rear of the MTR console, directly below the rear cabinet door.</p>		
	d.	Reduce the current range of the multimeter while adjusting the 5-volt indicator power supply to obtain a null on the minimum current range.	
	e.	Disconnect the test lead and the multimeter leads.	
	f.	Set the RSPU DC SELECT switch to OFF and the MODE switch to OPR.	

(U) Table 5-10. Nonperiodic Indicator Checks-TTR

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Step	Operation	Normal indication	Corrective procedure
1.	Prepare for the indicator checks.		
	a	Perform the procedures in table 2-1.	
	b	On the target track control-power supply, set the switches as indicated	
		Switch	Setting
		AGC-MANUAL	MANUAL
		TTR PULSE WIDTH	LONG
		IND	A
		Rotate the GAIN control fully counterclockwise	
	c	On the target antenna control group, set the AGC-LIN-LOG switch to AGC and the TEST switch to TEST	
	d	Set the TTR range to 200,000 yards.	
	e	On the elevation indicator, set the NOR H <sub>T</sub> switch to NOR	

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(U) Table 5-10. Nonperiodic Indicator Checks—TTR—Continued

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Step	Operation	Normal indication	Corrective procedure								
1.	Continued										
	f	On the range radar power control indicator, set the switches as indicated									
		<table><tr><th>Switch</th><th>Setting</th></tr><tr><td>TEST—OPERATE</td><td>TEST</td></tr><tr><td>RADAR GAIN</td><td>MAN</td></tr><tr><td>PULSE</td><td>LONG</td></tr></table>	Switch	Setting	TEST—OPERATE	TEST	RADAR GAIN	MAN	PULSE	LONG	
Switch	Setting										
TEST—OPERATE	TEST										
RADAR GAIN	MAN										
PULSE	LONG										
		Rotate the RADAR GAIN knob fully counterclockwise									
2.	Check the indicator sweep circuit adjustments.										
	a	Rotate the SWEEP LENGTH controls on the indicators fully counterclockwise									
	b	Adjust the INTENSITY and FOCUS controls on the indicators to obtain two clearly defined sweeps.									
		The sweeps are focused with minimum distortion.	On the target sweep generator, adjust the ASTIGMATISM control. Readjust the FOCUS control.								
			Refer to figure 51								
	c.	Observe the sweeps on each indicator.									
		The two sweeps are separated by approximately 1-1/2 inches.	On the elevation target video amplifier, adjust the NOR SPACE variable resistor. On the range and azimuth video amplifiers, adjust the VERT SPACING controls.								
			Refer to figure 51.								
		The upper sweep is approximately 3/4 inch above the center of the indicator.	On the elevation target video amplifier, adjust the NOR CENT variable resistor. On the range and azimuth video amplifiers, adjust the VERT CENT controls.								
			Refer to figure 51.								
		The sweeps are horizontally centered.	On the appropriate target sweep generator, adjust the H CENT control.								
			Refer to figure 51.								
		The edge of the sweep extends 1/4 inch beyond the range notch.	On the target sweep generator, adjust the MAX SWEEP RANGE control.								
			Refer to figure 51.								

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(U, Table 5-10. Nonperiodic Indicator Checks-TTR-Continued)

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Step	Operation	Normal indication	Corrective procedure
2	Continued		
		The sweep is approximately 4 inches long.	On the target sweep generator, adjust the A SWEEP LG control Refer to figure 51
d	If any adjustments were made in c above repeat the procedures in c above		
e	Set the TTR range to 40,000 yards.		
f	On each indicator, rotate the SWEEP LENGTH control fully clockwise	The range notch is near the right edge of the indicator.	On the target sweep generator, adjust the MIN SW control Refer to figure 51
g	On the target track control power supply, set the TTR PULSE WIDTH switch to SHORT and the IND switch to R	On each indicator, the expanded area on the sweep is approximately 1/2 inch long.	On the appropriate target sweep generator, adjust the EXP WIDTH control Refer to figure 51.
		The sweep is approximately 4 inches long.	Adjust the R SWEEP LENGTH control on the right side of the appropriate indicator. Refer to figure 51
3.	Check the range notch adjustments and horizontal displacement		
a	On the target track control power supply set the TTR PULSE WIDTH switch to LONG		
b	Observe the target range indicator	The TTR range notch on the lower sweep is within the limits of 1/8 to 3/16 of an inch in amplitude.	Adjust variable resistor R3 on A23 in the TTR RSPU Refer to figure 51
		The TTR range notch on the upper sweep is within the limits of 1/8 to 3/16 of an inch in amplitude.	Adjust variable resistor R1 on A23 in the TTR RSPU Refer to figure 51.

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(U) Table 5-10. Nonperiodic Indicator Checks-TTR-Continued

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Step	Operation	Normal indication	Corrective procedure
3	Continued		
c	Operate the TTR PULSE WIDTH switch from LONG to SHORT and then to LONG	No horizontal displacement of the range notch is observed on the azimuth or elevation indicator	Adjust variable resistor R4 on A32 in the TTR RSPU to minimize the displacement. Refer to figure 51
		No horizontal displacement of the range notch is observed on the range indicator	Adjust variable resistor R3 on A32 in the TTR RSPU to minimize the displacement. Refer to figure 51
4	Check the video gain adjustments.		
a	On the target error voltage monitor, verify that the BEACON-TARGET switch is set to TARGET		
b	On the target track control-power supply, verify that the TTR PULSE WIDTH switch is set to LONG. Set the AGC-MANUAL switch to AGC and the IND switch to A		
c	On the target track control-power supply, rotate the HV SUPPLY control to START and depress the HV SUPPLY ON switch		
d	Adjust the HV SUPPLY control to obtain an indication in the center of the white block on the MAGNETRON meter		
		The complete magnetron transmitter pulse is visible on the indicators.	Perform the procedures in table 4-23, step 4. Refer to figure 51
		The magnetron transmitter pulse is between 1 and 1-1/4 inches in amplitude	On the appropriate target video amplifier, adjust the VIDEO GAIN variable resistor. If the adjustment range is insufficient, adjust variable resistor R2 on A23 in the TTR RSPU as required to enable adjusting all three indicators properly. Refer to figure 51
e	Verify that the TTR RSPU MODE switch is set to OPR.		
f	Rotate the HV SUPPLY knob to START and depress the HV SUPPLY OFF switch		

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(U, Table 5-10. Nonperiodic Indicator Checks—TTR—Continued)

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Step	Meaning	Normal Condition	Corrective Procedure
5	Check the elevation indicator +H <sub>T</sub> sweep displacement		
a.	Position the TTR antenna elevation to 0 mils		
b.	Set the TTR range to 42,420 yards		
c.	On the target track control power supply set the AGC MANUAL switch to MANUAL and rotate the GAIN control fully counter clockwise. Set the MD switch to R.		
d.	Have the computer operator perform the procedures in e through g below.		
e.	Energize the computer as prescribed in the daily power checks in TM 9-1430-1251 12-1.		
f.	On the keyboard/display, enter 6 and depress CR.		
g.	Enter DFL and depress CR.		
h.	On the elevation indicator set the NOR H <sub>T</sub> switch to H <sub>T</sub> . Observe the elevation indicator.		
	The height graticule is illuminated.		
	Refer to figure 51.		
	The H <sub>T</sub> LED display indicates between 100 and 100.		
	Recheck the settings of the TTR range (42,420 yards) and antenna elevation (0 mils).		
	The lower sweep is coincident with the bottom etched mark on the height graticule.		
	On the elevation target video amplifier, adjust HT ZERO variable resistor R35.		
	Refer to figure 51.		
i.	Set the antenna elevation to 800 mils.		
	The H <sub>T</sub> LED display indicates between 89,900 and 90,100.		
	Recheck the setting of the TTR antenna elevation.		
	The lower sweep is coincident with the upper etched mark on the height graticule.		
	On the elevation target video amplifier, adjust 90K SF variable resistor R31.		
	If the graticule height cannot be obtained, adjust LIMIT variable resistor R34 fully clockwise. Readjust the 90K SF variable resistor.		
	Refer to figure 51.		
j.	Adjust LIMIT variable resistor R34 until the upper sweep just starts to lower.		
k.	Notify the computer operator that the checks have been completed.		

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*(U) Table 5-10. Nonperiodic Indicator Checks-TTR-Continued*

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Step	Operation	Normal indication	Corrective procedure
6.	Reestablish the switch positions.		
	a	On the range radar power control indicator, set the RADAR GAIN switch to LIN-LOG and the TEST OPERATE switch to OPERATE.	
	b	On the target track control-power supply, set the AGC-MANUAL switch to AGC	

*(U) Table 5-11. Nonperiodic Tracking Servo Checks-TTR*

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Step	Operation	Normal indication	Corrective procedure
1.	Check the dc balance of the servo error converters. Perform the procedures in table 3-6, steps 1 and 3.		
2.	Check the balance of the azimuth and elevation angle error modulators. Perform the procedures in table 3-6, steps 4 and 5		
3.	Acquire the radar test set in the short pulse mode. Perform the procedures in table 2-7, steps 1 and 2.		
4.	Check the initial phasing of the azimuth IF and elevation IF channels.		
	a	Position the TTR antenna in azimuth to approximately 5 mls greater than the radar test set azimuth coordinate	<p>On the error voltage monitor, the AZ ANGLE ERROR meter indicates in the positive direction.</p> <p>On the TTR error voltage monitor, adjust the AZ PHASING control for a maximum positive meter indication. If no indication can be obtained on the TTR error voltage monitor, rotate the AZ GAIN control fully clockwise</p> <p>Refer to figure 53</p>
	b	Repeat a above, substituting elevation for azimuth and EL for AZ	
	c	Position the TTR antenna to the coordinates of the radar test set.	
5.	Check the phasing of the azimuth IF channel in the short pulse mode		
	a	Set the MAN-ACQUIRE AID-TRACK AID-AUTO switch to MAN	
	b	On the signal distribution panel in the radar set group, reverse the cables to the IF HY-3 hybrid, terminals 2 and 3.	
	c	Set the MAN-ACQUIRE AID-TRACK AID-AUTO switch to ACQUIRE AID	
	d	Position the TTR antenna in azimuth to approximately 5 mls greater than the radar test set azimuth coordinate	
	e	On the target error voltage monitor, operate and hold the AZ SENS switch in the HI position	

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(U) Table 5-11 Nonperiodic Tracking Servo Checks--TTR--Continued

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Step	Operation	Normal indication	Corrective procedure
5.	Continued		
		The AZ ANGLE ERROR meter indicates within 5 small divisions of zero.	On the TTR error voltage monitor, adjust the AZ PHASING control for an indication of zero. Refer to figure 53.
f	Position the TTR antenna in azimuth to approximately 5 mils less than the radar test set azimuth coordinate.	The AZ ANGLE ERROR meter indicates within 5 small divisions of zero	(1) Repeat d through f above, adjusting the AZ PHASING control to split the meter indication observed in e and f above. (2) Perform the procedures in table 6-8
g.	Release the AZ SENS switch.		
h	Position the TTR antenna to the coordinates of the radar test set.		
6.	Check the phasing of the azimuth IF channel in the long pulse mode		
a.	Set the TTR PULSE WIDTH switch to LONG.	The radar test set pulse is in the range notch.	Perform the procedures in table 2-7, steps 2 and 3.
b	On the error voltage monitor, operate and hold the AFC SENS switch in the HI position.	The RCVR TEST meter indicates 50	On the error voltage monitor, adjust the PRESET 1 FINE control to obtain an indication of 50 on the meter. Refer to figure 50.
c.	Release the AFC SENS switch.		
d	Position the TTR antenna in azimuth to approximately 5 mils greater than the radar test set azimuth coordinate		
e	Operate and hold the AZ SENS switch in the HI position	The AZ ANGLE ERROR meter indicates within 5 small divisions of zero.	On the azimuth long pulse bandpass filter, adjust the PHASE TRIM control for an indication of zero. If zero can not be obtained, set the azimuth PHASE TRIM control to approximately midrange. Adjust the sum long pulse bandpass filter PHASE TRIM control. Repeat e above Refer to figure 48

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Step	Operation	Normal indication	Corrective procedure
6.	Continued		
		<i>Note.</i> If the sum long pulse bandpass filter PHASE TRIM control is adjusted, both elevation and azimuth channels must be rechecked in the long pulse mode	
	f. Position the TTR antenna in azimuth to approximately 5 mils less than the radar test set azimuth coordinate.		
		The AZ ANGLE ERROR meter indicates within 5 small divisions of zero.	
			Repeat d through f above, adjusting the AZ PHASING control to split the meter indication observed in e and f above
	g. Release the AZ SENS switch.		
	h. Position the antenna in azimuth to the coordinates of the radar test set		
7.	Check the phasing of the elevation channel in the short pulse mode		
	a. Set the TTR PULSE WIDTH switch to SHORT		
	b. Perform the procedures in step 5d through h above, substituting EL for AZ and elevation for azimuth		
8.	Check the phasing of the elevation channel in the long pulse mode		
	a. Perform the procedures in step 6 above, substituting EL for AZ and elevation for azimuth		
	b. Set the range MAN—ACQUIRE AID—TRACK AID—AUTO switch to MAN		
	c. Reverse the cables to HY-3, terminals 2 and 3		
	d. Set the MAN—ACQUIRE AID—TRACK AID—AUTO switch to ACQUIRE AID		
9.	Check the azimuth error channel gain in the short pulse mode.		
	a. Set the TTR PULSE WIDTH switch to SHORT		
		The radar test set pulse is in the range notch	
			Perform the procedures in table 2-7, steps 2 and 3.
	b. Set the elevation and azimuth MAN—AID—AUTO switches to AUTO. Record the coordinates of the radar test set		
		The TTR antenna is auto locked to the radar test set pulse.	
			Refer to figures 48, 53, and 54
	c. Set the elevation and azimuth MAN—AID—AUTO switches to MAN		
	d. Position the TTR antenna in azimuth to 5 mils greater than the radar test set azimuth coordinate noted in b above		
		The AZ ANGLE ERROR meter indicates +5 mils.	
			On the error voltage monitor, adjust the AZ GAIN control. If the adjustment range is inadequate, perform the procedures in table 5-3, step 7. Repeat the procedures in steps 1 through 9 above.
			Refer to figure 48



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(U) Table 6 II Nonperiodic Tracking Servo Checks-TTR-Continued

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Step	Operation	Normal indication	Corrective procedure
9.	Continued		
	a	Position the TTR antenna in azimuth to 5 mils less than the radar test set azimuth coordinate noted in b above. The AZ ANGLE ERROR meter indicates between -4 and -6 mils Refer to figure 48	
10.	Check the azimuth error channel gain in the long pulse mode.		
	a.	Set the TTR PULSE WIDTH switch to LONG The radar test set pulse is in the range notch. Perform the procedures in table 2-7, steps 2 and 3	
	b.	Position the TTR antenna in azimuth to 5 mils greater than the radar test set azimuth coordinate noted in step 9b above. The AZ ANGLE ERROR meter indicates +5 mils On the target azimuth servo error converter, adjust the LP TRIM control. Refer to figure 53	
	c.	Position the TTR antenna in azimuth to 5 mils less than the radar test set azimuth coordinates noted in step 9b above The AZ ANGLE ERROR meter indicates between -4 and -6 mils. Refer to figure 48.	
	d.	Position the antenna in azimuth to the coordinate of the radar test set.	
11.	Check the elevation error channel gain in the short pulse mode. Perform the procedures in step 9 above, substituting EL for AZ and elevation for azimuth.		
12.	Check the elevation error channel gain in the long pulse mode. Perform the procedures in step 10 above, substituting EL for AZ and elevation for azimuth.		
13.	Check the azimuth and elevation error channel response to varying input signal levels		
	a.	Position the TTR antenna to the coordinates of the radar test set The radar test set pulse is in the range notch. Perform the procedures in table 2-7, steps 2 and 3.	
	b.	Position the TTR antenna to obtain an indication of +5 mils on both the AZ ANGLE ERROR and the EL ANGLE ERROR meters on the target error voltage monitor	
	c.	On the target test control, depress and hold the LONG PLS PWR INCR switch. The AZ and EL ANGLE ERROR meters indicate from +4 to +6 mils. Perform the procedures in tables 4-6 and 5-3	
	d.	Release the LONG PLS PWR INCR switch.	

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(U) Table 5-11 Nonperiodic Tracking Servo Checks—TTR—Continued

## UNCLASSIFIED

Step	Operation	Normal indication	Corrective procedure
13.	Continued		
	e On the target test control, set the SIGNAL LEVEL switch from 00 to 40 in 10-db steps.	For each 10-db step, the AZ and EL ANGLE ERROR meters indicate from +4 to +6 mils	Perform the procedures in tables 4-6 and 5-3
	f Set the SIGNAL LEVEL switch to 50	The AZ and EL ANGLE ERROR meters indicate from +3 to +7 mils.	Perform the procedures in tables 4-6 and 5-3
	g Reset the SIGNAL LEVEL switch to 00		
14.	Check the azimuth and elevation error channels response to CW signals.		
	a Verify that the AZ and EL ANGLE ERROR meters still indicate +5 mils. If necessary, reposition the TTR antenna.		
	b On the target test control, set the MODE switch to CW	The AZ and EL ANGLE ERROR meter indications are between +4 and +6 mils.	Refer to figure 48
	c Set the elevation and azimuth MAN—AID—AUTO switches to AUTO	The TTR antenna is auto locked to the radar test set signal.	Refer to figures 48, 53, and 54.
15.	Reestablish the switch positions.		
	a Set the MULTI BIN switch to OFF and the range MAN ACQUIRE AID—TRACK AID—AUTO switch to MAN.		
	b Set the elevation and azimuth MAN AID—AUTO switches to MAN		
	c On the target test control, set the SIGNAL LEVEL switch to 70 and the MODE switch to PULSE		
	d On the missile control-indicator group, set the TARGET—STANDBY MISSILE switch to STANDBY		

(U) Table 5-12. Nonperiodic Target Track Control-Power Supply Check—TTR

## UNCLASSIFIED

Step	Operation	Normal indication	Corrective procedure
	Note All controls and indicators are located on the target track control-power supply		
*1.	Prepare for the check.		
	a Pull out the target track control-power supply to a service position and remove the left protective screen		

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1, Table 5-12 Nonperiodic Target Track Control Power Supply Check-TTR (Continued)

**UNCLASSIFIED**

Step	Operation	Normal indication	Corrective procedure
*1	Continued		
b	Rotate the HV SUPPLY knob to START and observe the position of the stop on the brush holder plate.	All brush arms are positioned against the stops	Loosen the setcrews, and position the brush arms against the stops
2.	Perform the daily TTR transmitter check procedures in table 2-5, steps 1 through 4		
3	Return the equipment to normal operation.		
a	Rotate the HV SUPPLY knob to START and depress the HV SUPPLY OFF switch		
b	Install the protective screen, and secure the target track control-power supply		

(U, Table 5-13 Nonperiodic Power Monitor Adjustments-TTR, MTR, and TRR)

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Step	Operation	Normal indication	Corrective procedure
1.	At the antenna support base, set the ANTENNA switch to DISABLE and the BLOWER switch to OFF		
2	Perform the power monitor adjustments for the TTR.		
a	Subtract 50.5 from the average loss in db, stamped on the directional coupler on the target track monopulse-duplexer.		
b	On the power monitor, set the SCALE-db switch clockwise from its stop the number of positions equal to the whole number value of the difference obtained in a above		
c	Loosen the locking screw, and move the escutcheon plate of the SCALE-db switch until the 0 falls beneath the switch pointer. Lock the plate in this position.		
d	Remove the cover from the small SCALE-db switch and set the switch clockwise from the stop, the number of positions equal to the number of tenths in the difference calculated in a above. Replace the cover		
e	Verify that the value of the power monitor matching resistor is the value required for the power monitor thermistor mount used		
f	Set the BLOWER switch to ON and the ANTENNA switch to NORMAL.		
3	Perform the power monitor adjustments for the MTR		
a	Subtract 47.5 from the average loss in db, stamped on the directional coupler on the monopulse-duplexer.		
b.	Perform the procedures in step 2b through f above.		
4.	Perform the RF power test set adjustments for the TRR.		
a.	Subtract 41 from the midband frequency loss in db, stamped on the range RF control-power supply group		
b.	Perform the procedures in step 2b through f above on the RF power test set		

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(U) Table 5-14. Nonperiodic Transmitter Pulse Width Checks—TTR and MTR

## UNCLASSIFIED

Step	Operation	Normal indication	Corrective procedure
1.	Prepare for the transmitter pulse width checks.		
	a.	Perform the procedures in table 2-1	
	b.	Establish telephone communications between the radar test set and the TTR or MTR antenna	
	Note: This check requires the use of an oscilloscope with at least a 10-MHz bandwidth and a 5 mV root per centimeter sensitivity.		
	c.	At the radar test set, connect the vertical input of an oscilloscope to the MTR/TTR VIDEO coaxial jack. Terminate the coaxial cable with a 75-ohm termination.	
	d.	At the radar test set, verify that the AC POWER switch is set to ON. Set the FUNCTION switch to LOCAL.	
2.	Check the TTR transmitter pulse widths.		
	a.	On the target track control-power supply, set the TTR PULSE WIDTH switch to SHORT.	
	b.	On the target track control-power supply, rotate the HV SUPPLY knob to START and depress the HV SUPPLY-ON switch.	
	c.	Adjust the HV SUPPLY knob to obtain an indication in the center of the MAGNETRON meter white block.	
	d.	Position the tracking antenna to the coordinates of the radar test set.	
	e.	At the radar test set, adjust the oscilloscope controls to display the transmitted RF pulse. Use internal sync.	
	The transmitted RF pulse width is between 0.25 and 0.32 microseconds at the 50-percent amplitude point.		
	On the TTR or MTR trigger amplifier, adjust the SHORT PULSE ADJ variable resistor to obtain a pulse width of 0.3 microseconds. If the adjustment range is insufficient, set the SHORT PULSE ADJ variable resistor to approximately midrange. On the trigger amplifier printed circuit board, adjust variable capacitor C2 to obtain a pulse width of approximately 0.3 microseconds. Set the required pulse width by adjusting the SHORT PULSE ADJ variable resistor.		
	The observed RF pulse has no indication of breaking up at the trailing edge due to transmitter arcing.		
	Refer to figure 47 (TTR)		
	Refer to figure 16 (MTR)		
	f.	On the target track control-power supply, set the TTR PULSE WIDTH switch to LONG.	

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Table 5-14. *Nonperiodic Transmitter Pulse Width Checks—TTR and MTR—Continued***UNCLASSIFIED**

Step	Operation	Normal indication	Corrective procedure
2	Continued		
	g. Adjust the oscilloscope controls to display the transmitted RF pulse		
		The transmitted RF pulse width is between 2.3 and 2.7 microseconds at the 50-percent amplitude point.	On the TTR trigger amplifier, adjust the LONG PULSE ADJ variable resistor to obtain a pulse width of 2.5 microseconds.
			Refer to figure 47
		The observed RF pulse has no indication of breaking up at the trailing edge due to transmitter arcing.	Refer to figure 47
	h. On the target track control-power supply, rotate the HV SUPPLY knob to START and depress the HV SUPPLY-OFF switch		
3.	Check the MTR transmitter pulse width.		
	a. On the missile error voltage monitor, set the BEACON-TARGET switch to TARGET		
	b. On the missile track control-power supply, rotate the HV SUPPLY knob to START and depress the HV SUPPLY-ON switch		
	c. Adjust the HV SUPPLY knob to obtain an indication of 3 ma on the MAGNETRON meter		
	d. Perform the procedures in step 2e above		
		<i>Note.</i> If the MTR trigger amplifier is a vacuum tube design and does not have an SP ADJ variable resistor, the pulse width should be between 0.23 and 0.32 microseconds	
	e. On the missile track control-power supply, rotate the HV SUPPLY knob to START and depress the HV SUPPLY-OFF switch		
	f. On the missile error voltage monitor, set the BEACON-TARGET switch to BEACON		
4.	Reestablish the system status.		
	a. On the radar test set, set the FUNCTION switch to RMT		
	b. Disconnect the oscilloscope and return it to storage		
	c. Break down the telephone communications established between the radar test set and the tracking radar antennas.		

(U) Table 5-15. *Nonperiodic Transmitter Frequency Checks—MTR***UNCLASSIFIED**

Step	Operation	Normal indication	Corrective procedure
1	Prepare for the transmitter frequency checks.		
	a. Perform the daily target AFC check procedures in table 2-14, steps 1 and 2.		

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(U) Table 5-15. Nonperiodic Transmitter Frequency Checks—MTR—Continued

## UNCLASSIFIED

Step	Operation	Normal indication	Corrective procedure												
1.	Continued														
	b	On the missile track control power supply, set the TUNE-SLEW switch to SLEW													
	c	On the missile error voltage monitor, set the BEACON TARGET switch to BEACON													
	d	On the missile track control power supply, adjust the HV SUPPLY knob to obtain an indication of 10 ma on the MAGNETRON meter													
2.	Adjust the current on the frequency error converter.														
	a	On the antenna support base, set the ANTENNA switch to DISABLE and the BLOWER switch to OFF.													
	b	Adjust variable resistor R12 on the frequency error converter fully counterclockwise													
	c	On the target track RF control power supply, set the FREQUENCY switch to INCREASE or DECREASE and operate the FREQUENCY TUNE switch to tune the magnetron to the area of the tuning dial that corresponds to the cavity in use as noted below. The following list indicates the numbers on the magnetron tuning drive dial that correspond approximately with the cavity types.													
		<table><tr><th>Cavity no.</th><th>Tuning dial no</th></tr><tr><td>9157979</td><td>1</td></tr><tr><td>9157980</td><td>2</td></tr><tr><td>9157981</td><td>3</td></tr><tr><td>9157982</td><td>4</td></tr><tr><td>9157983</td><td>5</td></tr></table>	Cavity no.	Tuning dial no	9157979	1	9157980	2	9157981	3	9157982	4	9157983	5	
Cavity no.	Tuning dial no														
9157979	1														
9157980	2														
9157981	3														
9157982	4														
9157983	5														
	d	Operate the FREQUENCY-TUNE switch to tune through the area until a deep null (d.p.) is noted on the meter on the frequency error converter. Care should be exercised to obtain the strongest null, since it is possible to observe more than one null on the meter. Adjust variable resistor R12 to keep the indication on-scale.													
	e	Set the TUNE-SLEW switch on the missile track control power supply to TUNE. Adjust variable resistor R12 until the minimum point of the null is approximately 0.1 ma as observed on the meter.													
	<b>Caution</b> It may be necessary with some cavities to readjust the attenuator on the duplexer in order to obtain a good null. Loosen the locking nut and turn the slotted shaft clockwise a maximum of 5 turns. Caution must be exercised to avoid damaging the attenuator block from excessive torque.														
	f	Set the ANTENNA switch to NORMAL and the BLOWER switch to ON													
3.	Calibrate the FREQUENCY meter.														
	a	On the missile track control power supply, set the TUNE-SLEW switch to SLEW													
	b	With the magnetron operating at the frequency determined in step 2d above, observe the FREQUENCY meter.													

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(U) Table 5-15. Nonperiodic Transmitter Frequency Checks—MTR—Continued

**UNCLASSIFIED**

Step	Operation	Normal indication	Corrective procedure
3.	Continued		
		The FREQUENCY meter (SLEW scale) indicates the number of the cavity in use.	Adjust the METER ADJ SLEW variable resistor on top of the missile track control-power supply Refer to figure 16.1.
e.	Set the TUNE—SLEW switch to TUNE.		
d.	On the missile track control-power supply, operate the FREQUENCY switch to INCREASE or DECREASE as necessary to obtain a maximum indication (to the right) on the FREQUENCY meter	The OFF FREQ indicator light is illuminated.	Refer to figure 16.1.
e.	Set the OVERRIDE switch to ON	The OFF FREQ indicator light extinguishes.	Refer to figure 16.1.
f.	Set the OVERRIDE switch to OFF.		
g.	Adjust the METER ADJ TUNE variable resistor to obtain a maximum indication on the FREQUENCY meter		
h.	Operate the FREQUENCY switch to INCREASE or DECREASE until the pointer on the FREQUENCY meter just enters the white segment of the TUNE scale.	The OFF FREQ indicator light extinguishes.	(1) Adjust the RELAY ADJUST variable resistor on top of the missile track control-power supply. (2) Repeat d and h above. Refer to figure 16.1
i.	Operate the FREQUENCY switch until the FREQUENCY meter indicates a null (dip) in the white segment of the TUNE scale		
4.	Deenergize the MTR transmitter.		
	Rotate the HV SUPPLY knob to START and depress the HV SUPPLY—OFF switch		

(U) Table 5-16 Nonperiodic Computed Receiver Sensitivity Figure Check: MTR

**UNCLASSIFIED**

Step	Operation	Normal indication	Corrective procedure
	<p><i>Note.</i> To measure the MTR receiver performance (table 2-17, Daily Monopulse Receiver Checks) requires the measurement of receiver sensitivity. For any given radar site, a minimum number must be established which is primarily dependent on site conditions. This table provides the method for establishing the computed receiver sensitivity figure.</p>		

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Table 5-6 Nonprodrac Computed Receiver Sensitivity Figure Check MTR (Continued)

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Step	Condition	Notes and/or	Reference procedure
	<p>Note: The following rate compute is done per steps 1 and 2 of this table must be performed with care and in unbroken succession.</p>		
1.	Measure the RF power transmitted in the BEACON mode.		
	a.	On the antenna pedestal set the ANTENNA switch to DISABLE and the BLOWER switch to OFF.	
	b.	Perform the procedures in table 3-9, steps 4, 5, and 7.	
	<p>Note: If the meter indication obtained in table 3-9 step 7a is beyond zero (to the right), adjust the HV SUPPLY control on the missile track control-power supply to reduce the magnetron current to obtain an on-scale indication. Repeat the procedures in table 3-9 step 7. Record the final db value obtained in table 3-9, step 7b.</p>		
	<p>Note: The magnetron current used to measure the RF power must be carefully noted and maintained when performing steps 1c and 2b below.</p>		
	c.	Set the BLOWER switch to ON and the ANTENNA switch to NORMAL.	
2.	Measure the RF power received at the radar test set.		
	a.	Position the MTR antenna to the coordinates of the radar test set.	
	b.	On the radar test set, set the FUNCTION switch to LOCAL and the METER switch to 0.	
	<p>Note: The following procedure assumes that the RF POWER dB meter has been calibrated. (Refer to table 4-3, step 2.)</p>		
	c.	Observe and record the indication on the radar test set RF POWER dB meter.	
	<p>The RF POWER dB meter indication is between 0 and 6.</p>		
	<p>If the meter indicates beyond 0, reduce the magnetron current and RF power to obtain an on-scale indication on the missile track control-power supply. Repeat steps 1a through 2c above.</p>		
3.	Compute the receiver sensitivity figure.		
	a.	Subtract the radar test set RF POWER dB meter indication obtained in step 2c above from the MTR final db value obtained in step 1b above.	
	b.	Algebraically add 58 to the result obtained in a above. The resultant number is the MTR computed receiver sensitivity figure. Record this number for future use.	
4.	Deenergize the MTR magnetron transmitter.		
	Rotate the HV SUPPLY control to START and depress the HV SUPPLY-OFF switch.		
5.	Condition the radar test set for remote operation.		
	Set the FUNCTION switch to RMT.		



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(U) Tab 5-17 Nonperiodic Gate and Sweep Generator Board Adjustments-MTR

**UNCLASSIFIED**

Step	Operation	Normal indication	Corrective procedure
1	Prepare for the gate and sweep generator adjustments.		
	a	On the MTR RSPL front panel set the MODE switch to OPR	
	b	Connect a test cable between the TRACK RANGE MARK test jack on the MTR RSPL front panel and the external sync input on a dual-trace oscilloscope	
2	Perform the gate and sweep generator board adjustments.		
	Using the oscilloscope measure the delays and pulse widths listed below		
	Measure between	Width	Delay
	A29TP13-A31TP3		1.2 $\mu$ s
	-A31TP3	.6 $\mu$ s	Adjust variable resistor R1 on A31. Adjust variable resistor R2 on A31.
	A29TP13 A31TP5		1.3 $\mu$ s
	-A31TP5	.4 $\mu$ s	Adjust variable resistor R4 on A31. Adjust variable resistor R3 on A31.
	-A31TP4	.2 $\mu$ s	Adjust variable resistor R5 on A31.
	Refer to figure 20		
3.	Disconnect the oscilloscope and test cable		

(U) Table 5-18. Nonperiodic Indicator Checks-MTR

**UNCLASSIFIED**

Step	Operation	Normal Indication	Corrective Procedure
1.	Prepare for the indicator checks.		
	a.	Perform the procedures in table 2-1.	
	b.	On the missile track control drawer, set the TEST switch to TEST	
	c.	On the missile track control power supply, set the AGC-MANUAL switch to MANUAL and rotate the GAIN control fully counterclockwise.	
	d.	Set the MTR range to 40,000 yards	
2.	Check the range indicator sweep circuit adjustments and range notch amplitude.		
	a.	On the MTR range indicator, set the IMAGE SPACING switch to OFF and rotate the SWEEP LENGTH control fully clockwise	
		The sweep is focused with minimum distortion.	
			On the missile sweep generator, adjust the ASTIGMATISM control. Readjust the FOCUS control
			Refer to figure 21
		The sweep is positioned approximately 1/2 inch below the center of the indicator.	
			On the missile video amplifier, adjust the VERT CENT control.
			Refer to figure 21.

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(U) Table 5-18. Nonperiodic Indicator Checks-MTR-Continued

## UNCLASSIFIED

Step	Operation	Normal indication	Corrective procedure
2.	Continued		
		The expanded area is at the right side of the indicator.	On the missile sweep generator, adjust the MIN SW control Refer to figure 21
b.	Rotate the SWEEP LENGTH control fully counterclockwise	The expanded width measures approximately 1/2 inch.	On the missile sweep generator, adjust the EXP WIDTH control Refer to figure 21
c.	Set the MTR range to 200,000 yards.	The sweep length is approximately 4 inches long.	On the missile sweep generator, adjust the NB SWEEP LG control. If the adjustment range is insufficient, adjust the MAX SWEEP LENGTH control in the right side of the indicator Refer to figure 21
		The sweep is horizontally centered.	On the missile sweep generator, adjust the H CENT control Refer to figure 21.
		The edge of the sweep extends 1/4 inch beyond the expanded area	On the missile sweep generator, adjust the MAX SWEEP RANGE control Refer to figure 21
		The range notch in the expanded area is within 1/8 to 3/16 of an inch in amplitude.	Adjust variable resistor R1 on A23 in the MTR RSPU
d.	If any sweep circuit adjustments were made in b or c above, repeat the procedures in b and c above		
3.	Set the AGC-MANUAL switch to AGC.		
4.	Check the video gain adjustments.		
a.	On the missile error voltage monitor, set the BEACON-TARGET switch to TARGET		
b.	On the missile track control power supply, rotate the HV SUPPLY knob to START and depress the HV SUPPLY-ON switch		

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(U) Table 5 18. Nonperiodic Indicator Checks-MTR-Continued

**UNCLASSIFIED**

Step	Operation	Normal indication	Corrective procedure
1	Continued		
c	Adjust the HV SUPPLY knob to obtain an indication of 3 ma on the MAGNETRON meter		
d	Observe the range indicator	The magnetron transmitter pulse is between 1 and 1.4 inches in amplitude	On the missile video amplifier, adjust the VIDEO GAIN variable resistor. If the adjustment range is insufficient, adjust variable resistor R2 on A32 in the MTR RSPU. Refer to figure 21
e	Rotate the HV SUPPLY knob to START and depress the HV SUPPLY OFF switch		
f	Set the BEACON-TARGET switch to BEACON		

(U) Table 5 19. Nonperiodic Tracking Servo Checks-MTR

**UNCLASSIFIED**

Step	Operation	Normal indication	Corrective procedure
1	Prepare for the tracking servo checks. On the missile control indicator group, set the switches as indicated		
	Switch	Setting	
	SIGNAL LEVEL	00	
	FREQ SELECT	REMOTE	
	MODE	PULSE	
	PULSES	SINGLE	
2	Check the dc balance of the servo error converters. Perform the procedures in table 3-11, steps 1 and 3		
3	Check the balance of the azimuth and elevation angle error modulators. Perform the procedures in table 3-11, steps 4 and 5.		
4	Acquire the radar test set in the short pulse mode. Perform the procedures in table 2-15, steps 1 and 2.		
5	Check the initial phasing of the azimuth IF and elevation IF channels.		
a	Position the MTR antenna in azimuth to approximately 5 mils greater than the radar test set azimuth coordinate		

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(U) Table 5-19. Nonperiodic Tracking Servo Checks—MTR—Continued

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Step	Operation	Normal indication	Corrective procedure
5	Continued	On the MTR error voltage monitor, the AZ ANGLE ERROR meter indicates in the positive direction.	On the MTR error voltage monitor, adjust the AZ PHASING control for a maximum positive meter indication. If no indication can be obtained on the MTR error voltage monitor, rotate the AZ GAIN control fully clockwise. Refer to figures 17 and 18 (AZ) or 19 (EL).
	b Repeat a above, substituting elevation for azimuth and EL for AZ		
	c Position the MTR antenna to the coordinates of the radar test set		
6.	Check the phasing of the azimuth IF channel.		
	a On the signal distribution panel in the radar set group, reverse the cable and termination on IF HY-1 hybrid, terminals 2 and 3		
	b Position the MTR antenna in azimuth to approximately 5 mils greater than the radar test set azimuth coordinate		
	c On the missile error voltage monitor, operate and hold the AZ SENS switch in the HI position	The AZ ANGLE ERROR meter indicates within 5 small divisions of zero	On the MTR error voltage monitor, adjust the AZ PHASING control for an indication of zero Refer to figure 17
	d Position the MTR antenna in azimuth to approximately 5 mils less than the radar test set azimuth coordinate.	The AZ ANGLE ERROR meter indicates within 5 small divisions of zero.	(1) Repeat b through d above, adjusting the AZ PHASING control to split the meter indication observed in c and d above (2) Perform the procedures in table 6-8.
	e Release the AZ SENS switch		
	f Position the MTR antenna to the coordinates of the radar test set		
7.	Check the phasing of the elevation channel.		
	a Perform the procedures in step 6b through f above, substituting EL for AZ and elevation for azimuth.		
	b Perform the procedure in step 6a above to restore normal operation		

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(U) Table 5-18. Nonperiodic Tracking Servo Checks—MTR—Continued

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Step	Operation	Normal indication	Corrective procedure
8.	Check the azimuth error channel gain		
a	Set the elevation and azimuth MAN AID—AUTO switches to AUTO. Record the coordinates of the radar test set.	The MTR antenna is auto locked to the radar test set pulse.	Refer to figures 17, 18, and 19.
b	Set the elevation and azimuth MAN AID—AUTO switches to MAN.		
c	Position the MTR antenna in azimuth to 5 mils greater than the radar test set azimuth coordinate noted in a above.	The AZ ANGLE ERROR meter indicates +5 mils.	On the MTR error voltage monitor, adjust the AZ GAIN control. If the adjustment range is inadequate, perform the procedures in table 5-3, step 7. Repeat steps 1 through 8 above.
			Refer to figure 17.
d	Position the MTR antenna in azimuth to 5 mils less than the radar test set azimuth coordinate noted in a above.	The AZ ANGLE ERROR meter indicates between -4 and -6 mils.	Refer to figure 18.
9	Check the elevation error channel gain		
	Perform the procedures in step 8 above, substituting EL for AZ and elevation for azimuth.		
10.	Check the azimuth and elevation error channel response to varying input signal levels.		
a	Position the MTR antenna to obtain an indication of +5 mils on both the AZ ANGLE ERROR and the EL ANGLE ERROR meters on the missile error voltage monitor.		
b	On the missile control indicator group, set the SIGNAL LEVEL switch from 00 to 40 in 10-db steps.	For each 10-db step, the AZ and EL ANGLE ERROR meters indicate from +4 to +6 mils.	Perform the procedures in tables 4-16 and 5-3.
c	Set the SIGNAL LEVEL switch to 50.	The AZ and EL ANGLE ERROR meters indicate from +3 to +7 mils.	Perform the procedures in tables 4-16 and 5-3.
d	Reset the SIGNAL LEVEL switch to 00.		
11.	Check the azimuth and elevation error channels response to CW signals.		
a	Verify that the AZ and EL ANGLE ERROR meters still indicate +5 mils. If necessary, reposition the MTR antenna.		

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(U) Table 5-19 Nonperiodic Tracking Servo Checks—MTR—Continued

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Step	Operation	Normal indication	Corrective procedure
11.	Continued		
	b On the missile control-indicator group, set the MODE switch to CW		
		The AZ and EL ANGLE ERROR meter indications are between +4 and +6 mils.	
			Refer to figure 17
	c Set the elevation and azimuth MAN-AID-AUTO switches to AUTO		
		The MTR antenna is auto locked to the radar test set signal.	
			Refer to figure 17.
12.	Reestablish the switch positions.		
	a On the missile control-indicator group, set the switches as indicated		
		Switch	Setting
		TARGET-STANDBY	STANDBY
		MISSILE	
		SIGNAL LEVEL	70
		MODE	PULSE
	b Set the elevation and azimuth MAN-AID-AUTO switches to MAN		
	c Set the DISABLE switch to the down position.		

(U) Table 5-20 Nonperiodic Radar Coder Checks—MTR

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Step	Operation	Normal indication	Corrective procedure
1.	Prepare for the radar coder checks.		
	a Perform the procedures in table 2-1.		
	b On the missile track control-power supply, set the AGC-MANUAL switch to MANUAL.		
	c On the missile error voltage monitor, set the PRESET switch to 3. Rotate the PRESET 3 control fully clockwise. Set the BEACON-TARGET switch to BEACON.		
	d On the missile track control drawer, set the switches as indicated		
		Switch	Setting
		TEST	TEST
		DISABLE	down
		RANGE	NORMAL

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(U) Table 5-20. *Nonperiodic Radar Coder Checks—MTR—Continued***CONFIDENTIAL**

Step	One action	Normal indication	Corrective procedure
1.	Continued		
a	On the coder control panel, set the switches as indicated:		
	Switch	Setting	
	PREKNOCK	1 FST	
	COMMAND ORIGIN	NORMAL	
	BURST	NORMAL	
	BURST ENABLE	NORMAL	
	BATTERY CODE	Greater than 2	
	SELECT	PITCH	
2.	Energize the MTR transmitter.		
a	On the missile track control power supply, rotate the HV SUPPLY knob to START		
b	Depress the HV SUPPLY ON switch and adjust the HV SUPPLY knob to obtain an indication of 10 ma on the MAGNETRON meter		
3.	Set the receiver gain.		
	On the missile track control power supply, adjust the receiver GAIN control to just barely remove the receiver noise from the range indicator		
4.	Prepare the computer for data transmission of orders to the coder		
a	Have the computer operator perform the procedures in b through d below		
b	On the keyboard/display, enter 7 and depress CR.		
c.	Enter COD and depress CR.		
d.	Enter PCH and depress CR.		
5.	Measure the accuracy of the pitch G orders transmitted by the computer as generated by the coder.		
a.	Observe the range indicator.		
	Four pulses are present.		
	Refer to figure 36.		
b	Adjust the MTR range handwheel to center the number 2 pulse in the range notch		
c.	Set the range MAN-AID-AUTO switch to AUTO		
d	On the MTR RSPU, verify that the COORD SELECT switch is set to DFCN		
e	Record the setting of the MTR RSPU BEACON DELAY switches		
f	Adjust the BEACON DELAY switches and momentarily depress the ENTER switch until the COORD DISPLAY indicates 0 yards		
g.	Set the MAN-AID-AUTO switch to MAN		

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(U) Table 5-20 Nonperiodic Radar Coder Checks-MTR-Continued

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Step	Description	Normal indication	Corrective procedure
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5. Continued

a The 1st ng below provides the distance between the number 2 and number 4 pulses for various pitch G order commands provided by the computer. The commands provide a check to determine if each digit bit is being properly toggled.

Note: The computer CODER TEST number can be advanced sequentially by simultaneously opening the CTL and C keys. Before each step change, set the range MAN-AID-AI TO switch to MAN.

Coder test no.	Range	P-G order
11	14,385	06
12	14,344	.00
13	14,385	06
14	14,426	12
15	14,508	24
16	14,672	49
17	14,999	97
18	15,650	1 94
19	16,967	3 89
20	19,589	7 77
21	20,081	8 50
22	20,040	8 44
23	14,344	00
24	14,303	06
25	14,262	12
26	14,180	- 24
27	14,016	- 49
28	13,688	97
29	13,032	1 94
30	11,721	3 89
31	9,098	7 77
32	8,606	8 5
33	8,647	-8.44

To determine the distance between the number 2 and number 4 pulses and the order accuracy, center the 4th pitch pulse in the range notch and set the range MAN-AID-AI TO switch to AI TO. Read the range directly on the MTR RSPL COORD DISPLAY.

The measured range is within 30 yards of the value in a above.

Refer to figure 36

Upon completing the checks, depress CTL and Z simultaneously to obtain the CODER menu.

6. Measure the accuracy of the yaw G orders transmitted by the computer as generated by the coder.

a. On the coder control panel, set the SELECT switch to YAW



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(U) Table 5-20. Nonperiodic Radar Coder Checks—MTR—Continued

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Step	Operation	Normal indication	Corrective procedure
6	<b>Continued</b>		
b	From the CODER menu on the computer keyboard display, select YAW and depress CR. CODER TEST 34 should appear on the indicator.		
c	To determine the distance between the number 2 and number 4 yaw pulses, repeat the procedures in step 5 above, substituting yaw for pitch. The data to be used is given below:		
	<i>Coder test no</i>	<i>Range</i>	<i>Y/G order</i>
	34	14,385	06
	35	14,314	00
	36	14,385	06
	37	14,426	12
	38	14,508	24
	39	14,672	48
	40	14,999	97
	41	15,655	194
	42	16,967	389
	43	19,389	777
	44	20,081	85
	45	20,040	844
	46	14,344	00
	47	14,303	06
	48	14,262	-12
	49	14,180	24
	50	14,016	-48
	51	13,688	97
	52	13,032	-194
	53	11,721	389
	54	9,098	777
	55	8,606	85
	56	8,647	-844
d	Set the range MAN—AID—AUTO switch to MAN.		
7	<b>Reestablish the computer status.</b>		
	Notify the computer operator that the checks have been completed.		
8	<b>Deenergize the MTR transmitter.</b>		
	Rotate the HV SUPPLY knob to START and depress the HV SUPPLY OFF switch.		
9	<b>Reestablish the switch positions.</b>		
a	Set the AGC—MANUAL switch to AGC.		
b	On the mass le error voltage monitor, set the PRESET switch to 1.		

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(U) Table 5-20 Nonperiodic Radar Coder Checks-MTR-Continued

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Step	Operation	Normal indication	Corrective procedure
9.	Continued		
	c	On the coder control panel set the PREKNOCK switch to NORMAL and the SELECT switch to BOTH	
	d	Verify that the assigned battery code is set into the BATTERY CODE switches	
	e	On the MTR RSPI set the BEACON DELAY switches to the setting noted in step 9e above. Depress the ENTER pushbutton	

(U) Table 5-21 Nonperiodic Missile Track Control Power Supply Checks-MTR

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Step	Operation	Normal indication	Corrective procedure
1.	Prepare for the check.		
	*a	Pul out the missile track control power supply to the service position and remove the left protective screen	
	*b	Rotate the HV SUPPLY knob to START and observe the positions of the stops on the brush holder plate	
		All brush arms are positioned against the stops.	
			Loosen the set screws and position the brush arms against the stops. Tighten the set screws.
	*c	<del>DELETED</del> Install the protective screen removed in a above and slide the missile track control power supply back into its normal position in the console.	
	d.	Perform the procedures in table 2-1	
2.	Energize the transmitter in the target mode.		
	a	On the missile error voltage monitor, set the BEACON-TARGET switch to TARGET	
	b	On the missile track control-power supply, depress the HV SUPPLY ON switch	
	c	Adjust the HV SUPPLY knob to obtain an indication of 3 ma on the MAGNETRON meter	
3.	Check the varnac mechanical stop.		
	Caution In the following procedures, do not exceed an indication of 15.5 kv on the MAGNETRON meter. Excessive high voltage may permanently damage the magnetron.		
	a.	Operate and hold the MAGNETRON switch to KV FS=20	
	b	Slowly rotate the HV SUPPLY knob clockwise until the mechanical stop is reached. Do not exceed 15.5 kv	
	The mechanical stop is reached between 15 and 15.5 kv.		
	Perform the procedures in step 4 below		

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Table 2-1 Nonperiodic Missile Track Control Power Supply Checks MFR Con. 2-1

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Step	Operation	Normal indication	Corrective procedure
3.	<b>Continued</b>		
	c. Release the MAGNETRON switch		
	7. Adjust the HV SUPPLY knob for an indication of 3 ma on the MAGNETRON meter		
	c. Proceed to step 3 below		
4.	<b>Adjust the variac mechanical stop.</b>		
	a. Rotate the HV SUPPLY knob to START		
	b. Depress the HV SUPPLY-OFF switch		
	c. On the missile track control power supply, set the IND HV switch to OFF		
	d. Partially pull out the missile track control power supply		
	e. Locate the adjustable stop on the variac metal disc and loosen it		
	f. Repeat step 2b and c above		
	g. Operate and hold the MAGNETRON switch to KV FS=20		
	h. Slowly rotate the HV SUPPLY knob to obtain an indication of 15.25 kv		
	i. Note the exact position of the HV SUPPLY knob.		
	j. Release the MAGNETRON switch		
	k. Rotate the HV SUPPLY knob to START		
	l. Depress the HV SUPPLY-OFF switch		
	m. Adjust the stop so the maximum clockwise travel of the HV SUPPLY knob is the same as in above		
	n. Tighten the restraining screw		
	o. Install the missile track control power supply		
	p. Repeat steps 2b through 3 above		
5.	q. Reestablish the switch and variac positions.		
	a. Rotate the HV SUPPLY knob to START and depress the HV SUPPLY-OFF switch		
	b. On the missile track control power supply, set the IND HV switch to ON		
	c. On the missile error voltage monitor, set the BEACON-TARGET switch to BEACON		

Table 3-12 Nonperiodic Target AFC Adjustments TRR

**UNCLASSIFIED**

Step	Operation	Normal indication	Corrective procedure
1.	Prepare for the TRR target AFC checks. Perform the procedures in table 2-1		
2.	Check the alignment of magnetron A to the tuning drive. Perform the procedures in table 3-14, step 4.		

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(U) Table 5-22 Nonperiodic Target AFC Adjustments- TRR- Continued

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Step	Operation	Normal indication	Interference procedure
3	Check the alignment of magnetron B to the tuning drive. Perform the procedures in table 3-14, step 3. <i>Note.</i> The following checks will require a voltmeter.		
4	Check the adjustment of the channel A preset voltage.		
	a	On the meter control, indicator in the range RF control power supply set the TUNING TRANSMITTER switch to A FAST	
	b	On the meter control indicator operate and hold the FREQ switch to the INCR position to tune the magnetron to the upper frequency stop.	
	c	On the A target AFC, disconnect the coaxial cable from J14	
	d	On the A target AFC connect a voltmeter between TP5 (VTO MON +) and TP6 (VTO MON -). Connect the positive lead of the voltmeter to TP5	

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(U, Table 5-22. Nonperiodic Target AFC Adjustments-TRR-Continued)

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Step	Operation	Normal indication	Corrective procedure
4	Continued		
		The voltmeter indicates between +7.5 and +8.1 volts.	<p>On the magnetron tuning drive, loosen the holddown screws for R8 (R1 for channel B). Rotate the resistor body to obtain an indication of +7.8 volts on the voltmeter. Tighten the holddown screws</p> <p><i>Caution</i> The variable resistor has internal stops, if significantly maladjusted, the stops will be sheared off, damaging the resistor</p> <p>Refer to figure 74.</p>
	e. Tune the magnetron to the low frequency stop.	The voltmeter indicates between -0.2 and -1.0 volts.	<p>Repeat b, d, and e above. Perform the corrective procedure in d above</p> <p>Refer to figure 74</p>
	f. Disconnect the voltmeter leads from TP5 and TP6		
	g. Reconnect the coaxial cable to J14		
5.	Check the adjustment of the channel B frequency preset voltage.		
	Perform the procedures in step 4 above, substituting B for A		
6	Check the receiver A AFC crystal current.		
	a. Set the TUNING TRANSMITTER switch to A FAST and tune magnetron A to approximately the midband frequency.		
	b. Set the XTAL CURRENT switch to each position for RCVR A CR5 through CR8		
		The XTAL CURRENT meter indicates a value between 40 and 100 $\mu$ a for each crystal.	<p>Perform the procedures in table 4-21, step 3a. Disregard the AFC lock check</p> <p>Refer to figure 74</p>
	c. Set the XTAL CURRENT switch to METER OFF		
7	Check the receiver B AFC crystal current.		
	a. Perform the procedures in step 6 above, substituting B for A		
	b. Set the TUNING TRANSMITTER switch to REMOTE		
	c. On the range antenna support base, set the BLOWER switch to ON and the ANTENNA switch to NORMAL		
8	Perform the daily TRR target AFC check procedures in table 2-23.		
	<p><i>Note</i> If the daily check requirements can be met, proceed to step 15 below. If problems still persist, proceed to step 9 below</p>		

(U) Table 5 22 Nonperiodic Target AFC Adjustments-TRR-Continued

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Step	Operation	Normal Indication	Corrective procedure
9.	Establish the switch settings.		
a	On the range radar power control indicator, set the switches as indicated.		
	<i>Switch</i>	<i>Setting</i>	
	TEST-OPERATE	TEST	
	RANGE ZERO	OFF	
	PULSE	LONG	
	REC INPUT	ANT	
	RADAR GAIN	MAN	
	NOISE OUTPUT	RADAR	
b.	On the TRR IF test generator, set the switches as indicated.		
	<i>Switch</i>	<i>Setting</i>	
	OSC	ON	
	MODE	PULSE	
	PULSE WIDTH	LONG	
	SLEW RATE	OFF	
	0-90 dB ATTENUATOR	10	
	0-9 dB ATTENUATOR	0	
10.	Check the A target AFC IF lock-on channel.		
a	On the IF test generator, disconnect P52 from J4 ATT OUT. Connect a coaxial cable from J4 ATT OUT to the TRR IF TEST jack (located under the test oscilloscope). Set the COARSE IF FREQ ADJUST control to 0.		
b	On the range antenna support base, set the ANTENNA switch to DISABLE and the BLOWER switch to OFF.		
c	On the TRR meter control-indicator, set the PULSE switch to LONG.		
d	On the A target AFC, disconnect the coaxial cable from J3-IF IN.		
e	Connect a coaxial cable from J3-IF IN to J5 B (located in the top front-center section of the range RF control-power supply group).		
	On the A target AFC, the AFC LOCK indicator is illuminated.		
	Refer to figure 74.		
11.	Check the A target AFC dc balance.		
a	On the A target AFC, disconnect the coaxial cable from J6.		
b	On the A target AFC, connect a voltmeter between TP2 (DC BAL) and TP7 (GND). Connect the positive meter lead to TP2.		

Table 5-22 Nonperiodic Target AFC Adjustments—TRR—Continued

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Step	Condition	Normal indication	Abnormal indication
11.	Continued	<p>The voltmeter indicates between plus and minus 150 millivolts.</p> <p>On the A target AFC, adjust the OFF SET TRIM variable resistor for an indication as close to zero as possible.</p> <p>Note: The adjustment range for the OFF SET TRIM variable resistor is small and it may not be obtainable.</p> <p>Refer to figure 74.</p>	
	c	Reconnect the cable to J6. Do not disconnect the voltmeter.	
	d	On the IF test generator, disconnect the cable added in 10a above and reconnect P52 to J4 ATT OUT.	
12	Check the A target AFC sample and hold delay adjustment		
	a	On the IF test generator, verify that the COARSE IF FREQ control is set to 0. Set the MODE switch to CW and the 0-90 dB ATTENUATOR switch to 50.	
	b	On the radar power control, set after adjust the RADAR GAIN control to obtain an indication of approximately 50 on the NOISE ON TFI meter.	
	c	On the IF test generator, adjust the FINE IF FREQ ADJUST control for maximum indication on the NOISE ON TFI meter. Set the MODE switch to PULSE and the 0-90 dB ATTENUATOR switch to 10.	
	d	On the IF test generator, disconnect P52 from J4 ATT OUT. Connect a coaxial cable from J4 ATT OUT to the IRK IF TEST jack located under the test case cover.	
	e	On the target AFC, adjust the FREQ TRIM variable resistor 20 turns counterclockwise. Adjust the SH STROBE TRIM variable resistor 20 turns counterclockwise.	
	f	Adjust the COARSE IF FREQ ADJUST control to .5.	
	g	While observing the voltmeter, adjust the SH STROBE TRIM variable resistor clockwise to obtain the first positive voltage maximum. The first maximum may be at the initial setting of the variable resistor. If the voltage exceeds +15 volts, adjust the COARSE IF FREQ ADJUST control toward 0 to obtain an indication of approximately +5 volts and continue the SH STROBE TRIM adjustment.	
	h	On the IF test generator, disconnect the coaxial cable added in d above and reconnect P52 to J4 ATT OUT.	
	i	Repeat the procedures in a through d above.	
	j	While observing the voltmeter, adjust the SH STROBE TRIM variable resistor to obtain an indication of 0 volts.	
	k	While observing the voltmeter, adjust the COARSE IF FREQ control to .2 and then to +2.	
		<p>The voltmeter indicates at least +4 volts and -4 volts.</p> <p>Repeat a through k above.</p> <p>Refer to figure 74.</p>	
	l	Disconnect the voltmeter leads from TP2 and TP7.	

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(U) Table 5-23. Nonperiodic Target AFC Adjustments--TRR--Continued

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Step	Operation	Normal indication	Corrective procedure
12	Continued		
	m Disconnect the coaxial cable between J5 B and J3 IF IN on the A target AFC.		
	n Reconnect the coaxial cable disconnected in step 10a above, to J3-IF IN.		
13	Check the AFC lock-on of the A target AFC.		
	Perform the daily target AFC check procedures in table 2-23.		
14	Check the B target AFC IF lock-on channel, dc balance, and sample and hold delay adjustment.		
	Perform the procedures in steps 10 through 13 above, substituting B for A.		
15.	Check the A target AFC discriminator center frequency.		
	a Verify or set the switches on the range radar power control indicator as indicated.		
		Switch	Setting
		TEST-OPERATE	TEST
		RANGE ZERO	TEST
		REC INPUT	ANT
		PULSE	LONG
		MAG SEL	A
		RADAR GAIN	LIN-LOG
	b If the TRR antenna receiver/transmitter door is open, verify that the PULSE switch on the meter control indicator is set to LONG and the TRANS ON ANT switch is set to A.		
	c Energize the magnetron A transmitter.		
	d Connect a coaxial cable between the TRR VID jack on the TRR control cabinet and the vertical input of the test oscilloscope. Adjust the test oscilloscope controls for a range zero pulse which is at least 1/2 division wide at the 80-percent amplitude points, and at least 4 divisions high.		
	The range zero pulse is rounded on top without any sharp spikes visible above the 80-percent points. The pulse is symmetrical above the 80-percent points.		
	The range zero pulse amplitude jitter is less than 10 percent of the pulse amplitude.		
	On the range antenna support base, verify that the ANTENNA switch is set to DISABLE and the BLOWER switch to OFF. On the A target AFC, adjust the FREQ TRIM variable resistor. If the adjustment range of the FREQ TRIM variable resistor is insufficient, perform the procedures in steps 9 through 12 above. Repeat step 15.		
	Refer to figure 74.		

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(U) Table 5 22. Nonperiodic Target APC Adjustments--TRR. Continued

## UNCLASSIFIED

Step	Operation	Normal indication	Corrective procedure
16	Check the B target APC discriminator center frequency. Perform the procedures in step 15 above, substituting B for A.		
17.	Return the TRR to normal operation.		
a	On the meter control-indicator, verify that the TUNING TRANSMITTER switch is set to REMOTE.		
b	On the range antenna support base, verify that the BLOWER switch is set to ON and the ANTENNA switch to NORMAL.		
c	On the TRR IF test generator, disconnect the coaxial cable between J4 ATT OUT and the IF TEST jack. Connect P52 to J4 ATT OUT. Set the OSC switch to OFF and the 0-90 dB ATTENUATOR switch to 90.		
d	Disconnect the coaxial cable from the TRR VID jack on the TRR control cabinet and from the test oscilloscope.		
e	On the range radar power control-indicator, set the TEST-OPERATE switch to OPERATE, the RANGE ZERO switch to OFF, and the NOISE OUTPUT switch to OFF.		

(U) Table 5 23. Nonperiodic Ferrite Switch Adjustments--TRR

## UNCLASSIFIED

Step	Operation	Normal indication	Corrective procedure
1	Prepare for the ferrite switch adjustments.		
a	Perform the procedures in table 3-14, steps 2 and 3.		
b	On the range radar power control indicator, set the REC INPUT switch to ANT.		
c	On the range antenna support base, set the PULSE switch on the meter control indicator to LONG.		
d	Using the FREQ switch on the meter control-indicator, tune both magnetrons to F1.4.		
2	Perform the ferrite switch adjustment.		
a	Connect a voltmeter between TP1 on the tuning switch driver and ground.		
		The voltmeter indication is between +0.4 and -0.4 volts.	
			Adjust A trim adjust variable resistor R17 on the tuning switch driver.
			Refer to figure 71.1.
b	Connect the voltmeter between TP2 and ground.		

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(U) Table 5-23 Nonperiodic Ferrite Switch Adjustments TRR-Continued

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Step	Operation	Normal indication	Corrective procedure
2.	Continued		
		The voltmeter indication is between +0.4 and -0.4 volts.	Adjust B trim adjust variable resistor
			R8 on the tuning switch driver
			Refer to figure 71.1
a.	Disconnect the voltmeter		
d.	On the meter control indicator, set the TRANS ON ANT switch to B and the AUTO-MAN-PAN NO LOSS switch to MAN		
e.	On the RF power test set, set the SCALF db switch fully clockwise		
f.	Calibrate the RF power test set by performing the procedures in table 3-14, step 6b through e		
g.	On the countermeasures control indicator, depress the MAG A HV ON switch		
h.	Adjust the MAG A HV knob to obtain an indication in the center of the green block on the MAG A meter		
i.	On the ferrite switch driver assembly, set the ADJ A-NORM switch to ADJ A and the ADJ C-NORM switch to NORM		
j.	On the ferrite switch driver assembly, hold the TEST ADJ B-OPERATE switch in the TEST ADJ B position, and adjust the ADJ A variable resistor to obtain an indication as near $\infty$ (null) as possible on the RF power test set.		
		The test set meter indication is between $\infty$ and 6 db.	Refer to figure 71.1.
k.	Using the FREQ switch on the meter control indicator, tune magnetron A to F5		
l.	On the ferrite switch driver assembly, hold the TEST ADJ B-OPERATE switch in the TEST ADJ B position, and adjust gain adjust A variable resistor R13 on the tuning switch driver to obtain an indication as near $\infty$ (null) as possible on the RF power test set.		
		The test set meter indication is between $\infty$ and 6 db.	Refer to figure 71.1.
m.	Repeat steps 1d, 2a, c, and j through l above.		
n.	Set the ADJ A-NORM switch to NORM		
o.	Using the FREQ switch on the meter control indicator, tune magnetron A to F3		
p.	On the RF power test set, set the ADJ MEAS switch to V.		
q.	On the meter control indicator, set the TRANS ON ANT switch to A and the AUTO-MAN-PAN NO LOSS switch to PAN NO LOSS.		
r.	On the RF power test set, set the ADJ MEAS switch to MEAS.		
s.	Set the ADJ C-NORM switch to ADJ C		
t.	Hold the TEST ADJ B-OPERATE switch in the TEST ADJ B position and adjust the ADJ C variable resistor to obtain an indication as near $\infty$ (null) as possible on the RF power test set.		

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(U) Table 5-23 Nonperiodic Ferrite Switch Adjustments-TRR Continued

**UNCLASSIFIED**

Step	Operation	Normal indication	Corrective procedure
2.	Continued		
	The test set meter indication is between $\infty$ and 6 db.		
	Refer to figure 71.1.		
	a.	Set the ADJ C-NORM switch to NORM	
	v.	On the RF power test set, set the ADJ-MEAS switch to V	
	u.	On the meter control indicator set the AUTO-MAN PAN NO LOSS switch to MAN	
	x.	Rotate the MOD A HV knob fully counterclockwise and depress the MAG A-HV OFF switch	
	y.	Depress the MAG B-HV ON switch and adjust the MOD B HV knob to obtain an indication in the center of the green block on the MAG B meter	
	z.	On the RF power test set, set the ADJ-MEAS switch to MEAS	
	aa.	Hold the TEST ADJ B-OPERATE switch in the TEST ADJ B position and adjust the ADJ B variable resistor to obtain an indication as near $\infty$ (null) as possible on the RF power test set.	
	The test set meter indication is between $\infty$ and 6 db.		
	Refer to figure 71.1		
	ab.	On the meter control indicator, set the TUNING TRANS switch to B FAST. Using the FREQ switch, tune magnetron B to F5	
	ac.	Hold the TEST ADJ B-OPERATE switch in the TEST ADJ B position and adjust gain adjust B variable resistor R4 on the tuning switch driver to obtain an indication as near $\infty$ (null) as possible on the RF power test set.	
	The test set meter indication is between $\infty$ and 6 db.		
	Refer to figure 71.1		
	ad.	Repeat steps 1d, 2b, c, and aa through ac above.	
	ae.	Rotate the MOD B HV knob fully counterclockwise and depress the MAG B-HV OFF switch	
	af.	On the RF power test set, set the ADJ MEAS switch to V and the SCALE db switch to 0	
	ag.	On the meter control indicator set the TUNING TRANS switch to REMOTE	
3.	Return the TRR to normal operation.		
	On the range antenna support base, set the BLOWER switch to ON and the ANTENNA switch to NORMAL		

(U) Table 5-24 Nonperiodic Lin-Log Receiver Checks-TRR

**UNCLASSIFIED**

Step	Operation	Normal indication	Corrective procedure
1	Prepare for the TRR lin-log receiver checks.		
	a.	Perform the procedures in table 2-1	

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11 Table 5-24 Nonperiodic Line Log Receiver Checks TRR Continued

**UNCLASSIFIED**

Step	Operation	Normal indication	Corrective procedure
1.	Continued		
a 1	On the range radar power control indicator, rotate the RADAR GAIN knob fully counterclockwise		
b	On the range radar power control indicator, set the switches as indicated		
	<i>Switch</i>	<i>Setting</i>	
	TEST OPERATE	TEST	
	MAG SEL	■	
	FREQUENCY A-B	B	
	RANGE ZERO	OFF	
	ALTO-MAN	MAN	
	PULSE	SHORT	
	RADAR GAIN	MAN	
	NOISE OUTPUT	RADAR	
	REC INPUT	NOISE LAMP	
c	On the TRR IF test generator, set the switches as indicated		
	<i>Switch</i>	<i>Setting</i>	
	OSC	OFF	
	MODE	CW	
	SLEW RATE	OFF	
	0-90 dB ATTENUATOR	30	
	0-9 dB ATTENUATOR	0	
	COARSE IF FREQ ADJUST	0	
	<i>Note:</i> For the remainder of this table the switches, controls and indicators are located on the range radar power control indicator unless otherwise indicated.		
d	Operate the FREQUENCY DCR--INCR switch to tune MAG B for an indication of 3.2 on the FREQUENCY meter		
e	Set the MAG SEL switch to A and the FREQUENCY A-B switch to A. Tune MAG A for an indication of 2.8 on the FREQUENCY meter		
2.	Adjust the logarithmic amplifier dc balance.		
a.	(Deleted)		
b	Adjust the large METER ZERO control to obtain an indication of 0 on the NOISE OUTPUT meter		
	The large METER ZERO control is near midrange.		
	Set the large METER ZERO control to approximately midrange. On range log arithmetic IF amplifier A7 in the TRR receiver subassembly, adjust the DC OFFSET control to obtain a NOISE OUTPUT meter indication of 0.		
	Refer to figure 74.		

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(L) Table 5 24 Nonperiodic Lin-Log Receiver Checks-TRR -Continued

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Step	Procedure	Normal indication	Corrective procedure
3	Check the channel A noise power received from the antenna		
a	Adjust the RADAR GAIN knob to obtain an indication of 100 on the NOISE OUTPUT meter		
b	On range linear IF amplifier A3, disconnect P25 from J3-IN A		
		The NOISE OUTPUT meter indication is less than 35	Refer to figure 74
c	Reconnect P25, disconnected in b above, to J3-IN A		
4	Check the channel B noise power received from the antenna		
a	Set the MAG SEL switch to B		
b	Repeat step 3 above		
5	Check the gain of the range linear IF amplifier.		
a	Set the MAG SEL switch to A		
b	Set the PULSE switch to LONG		
c	Set the RADAR GAIN switch to LIN LOG		
		The NOISE OUTPUT meter indicates between 40 and 65	
			On range linear IF amplifier A3, adjust the GAIN ADJ control to obtain an indication of 50 on the NOISE OUTPUT meter
			Refer to figure 74
6	Set the TRR IF test generator to the long pulse IF center frequency		
a	On the TRR IF test generator, set the OSC switch to ON		
b	Set the RADAR GAIN switch to MAN		
c	Adjust the RADAR GAIN knob to obtain an indication of approximately 80 on the NOISE OUTPUT meter		
d	On the TRR IF TEST generator adjust the FINE IF FREQ ADJUST control to obtain a maximum indication on the NOISE OUTPUT meter		
7	Check the insertion loss difference between the long and short pulse filters.		
a	Adjust the RADAR GAIN knob to obtain an indication of 100 on the NOISE OUTPUT meter		
b	Set the PULSE switch to SHORT		
c	On the TRR IF test generator, adjust the attenuator switches to obtain an indication as near to 100 as possible on the NOISE OUTPUT meter		
		The attenuator switches indicate between 19 and 23 db.	
			Refer to figure 74
d	Set the 0-90 dB ATTENUATOR switch to 90 and the OSC switch to OFF		
e	Rotate the RADAR GAIN knob fully counterclockwise		
8.	Energize the A transmitter.		
a	Set the REC INPUT switch to ANT		

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(U), Table 5-24 Nonperiodic Lin Log Receiver Checks-TTR-Continued

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Step	Operation	Normal indication	Corrective procedure
8.	Continued		
	b. On the countermeasures control indicator, rotate the MOD A HV knob fully counter-clockwise and depress the MAG A-HV switch		
	c. Adjust the MOD A HV knob to obtain an indication in the center of the green block on the MAG A meter		
9.	Check the video gain of the range logarithmic IF amplifier		
	a. Set the PULSE switch to LONG and the RADAR GAIN switch to LIN LOG		
	b. Using the test oscilloscope, display the transmitter pulse by monitoring the TTR cabinet TRR VID jack		
		The transmitter pulse amplitude is between +4.25 and +4.75 volts.	
			On range logarithmic IF amplifier A7, adjust the VIDEO GAIN variable resistor to obtain a +4.5 volt transmitter pulse amplitude.
			Refer to figure 74
	c. Disconnect and turn off the test oscilloscope.		
10.	Check the transmitter pulse amplitude on the target range indicator.		
	a. Observe the lower sweep on the TTR target range indicator		
		The complete transmitter pulse is visible.	
			Perform the procedures in table 4-23, step 4.
		The transmitter pulse amplitude is between 1-1/4 and 1-1/2 inches.	
			On the TTR RSPU, adjust variable resistor R4 on A23
			Refer to figure 52
	b. Verify that the TTR RSPU MODE switch is set to OPR		
11.	Deenergize the A transmitter.		
	On the countermeasures control indicator, rotate the MOD A HV knob fully counter-clockwise and depress the MAG A-HV OFF switch		
12.	Reestablish the switch positions.		
	Set the TEST OPERATE switch to OPERATE and the NOISE OUTPUT switch to OFF		

(U), Table 5-25 Nonperiodic Panoramic Receiver Checks-TTR

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Step	Operation	Normal indication	Corrective procedure
1.	Prepare for the panoramic receiver checks.		
	a. Perform the procedures in table 2-1.		

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(U) Table 5-25 Nonperiodic Panoramic Receiver Checks: TKR-Continued

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Step	Description	Normal indication	Corrective procedure										
1	Continued												
	a. For the remainder of this table, all switches, controls, and meters are located on the range radar power control indicator unless otherwise indicated.												
	b.	Set the switches as indicated											
		<table border="0"> <thead> <tr> <th>Switch</th><th>Setting</th></tr> </thead> <tbody> <tr> <td>TEST-OPERATE</td><td>TEST</td></tr> <tr> <td>NOISE OUTPUT</td><td>PAN</td></tr> <tr> <td>REC INPUT</td><td>ANT</td></tr> <tr> <td>PAN GAIN</td><td>MAN</td></tr> </tbody> </table>	Switch	Setting	TEST-OPERATE	TEST	NOISE OUTPUT	PAN	REC INPUT	ANT	PAN GAIN	MAN	
Switch	Setting												
TEST-OPERATE	TEST												
NOISE OUTPUT	PAN												
REC INPUT	ANT												
PAN GAIN	MAN												
	c.	On the IF test generator, verify that the OSC switch is set to OFF											
2.	Check the pan logarithmic amplifier dc balance												
	a.	Rotate the PAN GAIN control fully counterclockwise											
	b.	Adjust the small METER ZERO control to obtain an indication of 0 on the NOISE OUTPUT meter											
		The small METER ZERO control is near midrange.											
		(1) Slightly change the A and B magnetron frequencies											
		(2) Set the small METER ZERO control to approximately midrange											
		On pan logarithmic IF amplifier A2, adjust the DC OFFSET variable resistor to obtain a NOISE OUTPUT meter indication of 0											
3	Check the noise power received from the antenna												
	a.	Adjust the PAN GAIN control to obtain an indication of 100 on the NOISE OUTPUT meter											
	b.	On pan linear IF amplifier A1, disconnect P23 from J6-1N B											
		The NOISE OUTPUT meter indication is less than 40.											
		Slightly change the A and B magnetron frequencies											
		Refer to figure 75											
	c.	Reconnect P23, disconnected in b above, to J6-1N B.											
4.	Check the gain of the pan linear IF amplifier												
		Set the PAN GAIN switch to LIN LOG											
		The NOISE OUTPUT meter indicates between 60 and 80.											
		On pan linear IF amplifier A1, adjust the GAIN ADJ variable resistor to obtain an indication of 70 on the NOISE OUTPUT meter.											

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(U) Table 5-25 Nonperiodic Panoramic Receiver Checks TRR -Continued

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Step	Operation	Normal indication	Corrective procedure
5	Check the video display on the countermeasures control indicator		
	a. Set the NOISE OUTPUT switch to OFF		
	b. Observe the spot or sweep of the countermeasures control indicator	The receiver noise amplitude is between 1/8 and 3/16 of an inch	On the countermeasures video amplifier, adjust the PAN VIDEO GAIN variable resistor. If the adjustment range is insufficient, adjust the VIDEO GAIN variable resistor on pan logarithmic IF amplifier A2.
		Two sets of stable frequency pips are present.	Refer to figure 75.
			Perform the procedures in table 3-15.
		The amplitude of the frequency pips is approximately 3/4 of an inch	On the range receiver-transmitter panoramic frequency mixer stage, adjust variable attenuator AT2.
			Refer to figure 76.
6	Reestablish the switch positions		
	Set the TEST OPERATE switch to OPERATE		

(U) Table 5-26 (Included)

(U) Table 5-27 Nonperiodic Modulator High Voltage Limiter Checks TRR

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Step	Operation	Normal indication	Corrective procedure
1.	Prepare for the high voltage limiter checks.		
	a. Perform the procedures in table 2-1		
	b. On the countermeasures control indicator, rotate the MOD A HV and MOD B HV knobs fully counterclockwise		
	c. On the target range synchronizer, disconnect P15 from J3.		

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(U) Table 5-27 Nonperiodic Modulator High Voltage Limiter Checks TRR Continued

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Step	Operation	Normal indication	Corrective procedure
2.	Check the modulator A high voltage limit.		
	a.	On the frame of the countermeasures control indicator, near the pulse sweep generator, rotate the A HV LIM variable resistor fully counterclockwise.	
	b.	Depress the MAG A—HV ON switch.  The MAG A—READY indicator light extinguishes, and the MAG A—HV ON indicator light illuminates.  Refer to figure 87.	
		On the range radar power control indicator, the HIGH VOLTAGE—PRE-HEAT, HOT, and READY A indicator lights extinguish.  Refer to figure 87.	
	c.	Operate the MAG A meter switch to MOD A HV and slowly rotate the MOD A HV knob fully clockwise.	
	d.	Slowly rotate the A HV LIM variable resistor clockwise until the MAG A meter indicates on the right edge of the green block.	
	e.	Release the MAG A meter switch.	
	f.	Rotate the MOD A HV knob fully counterclockwise and depress the MAG A—HV OFF switch.	
3.	Check the modulator B high voltage limit.		
	a.	Repeat step 2 above for modulator B, substituting B for A.	
	b.	On the target range synchronizer, connect P15 to J3.	

(U) Table 5-28 Nonperiodic Radar Test Set Group Checks

**UNCLASSIFIED**

Step	Operation	Normal indication	Corrective procedure
1.	Prepare the tracking station for the check. Perform the procedures in table 2-1.		
2.	Prepare the radar test set for the check. Set the test set switches as indicated		
	Switch	Setting	
	AC POWER	ON	
	FUNCTION	CAL	
	MODE	PULSE	
	PULSE TEST	PRIMARY	
	PULSE WIDTH	SHORT	
3.	Check the panel edge lighting Depress the LAMPS pushbutton switch		

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(U) Table 5-28. Nonperiodic Radar Test Set Group Checks—Continued

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Step	Operation	Normal indication	Corrective procedure
3.	Continued	The panel edge lamps in the SIGNAL LEVEL switch, the RF POWER dB meter, and the MEAS FREQ meter illuminate.	Replace the bulbs as required Refer to figure 92
4.	Check the internal pulse test circuits.	<i>Note.</i> An oscilloscope (Tektronix 465 or equivalent) a T-connector (LG 274) and a 75-ohm termination are required for the following procedures. The ac power cord for the oscilloscope should be plugged into the 120V RECEPT connector on the radar test set front panel.	
	a. Connect the vertical input of an oscilloscope to the RRFTS VIDEO jack on the radar test set. Terminate the cable at the oscilloscope with a 75-ohm termination. Use internal sync.	A train of $0.25 \pm 0.1$ -microsecond pulses spaced $5 \pm 0.5$ microseconds is displayed on the oscilloscope.	Replace diode CR1 in the monitor detector. Refer to figure 93
	b. Set the PULSE WIDTH switch to LONG	A train of $2.5 \pm 0.2$ -microsecond pulses spaced $5 \pm 0.5$ microseconds is displayed on the oscilloscope.	Refer to figure 93.
5.	Check operation of the 10-db long-pulse attenuator (AT3).		
	a. Set the PULSE WIDTH switch to SHORT		
	b. Perform the CAL $\infty$ adjustment (table 4-3, step 2).		
	c. Unlock the OUTPUT control and adjust for an indication of 1 on the RF POWER dB meter. Relock the OUTPUT control.		
	d. Set the PULSE WIDTH switch to LONG		
	e. Set the METER switch to 10 dBm.		
	<i>Note.</i> With the METER switch set to 10 dBm, random indications (less than 0.3 db) may occur on the RF POWER dB meter. This condition is acceptable.		
	f. Perform the CAL $\infty$ adjustment (table 4-3, step 2) with the METER switch set to -10 dBm.		
	g. Verify that the SIGNAL LEVEL switch is set to 00	The RF POWER dB meter indication is between 0 and 2.	Refer to figure 93
6.	Check the power output calibration.		
	Perform the procedures in table 4-3, steps 10 and 11.		

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(U, Table 5 28. Nonperiodic Radar Test Set Group Checks—Continued

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Step	Operation	Normal indication	Corrective procedure
*7.	Check the characteristics of the radar test set trigger pulse.		
a	On the missile control indicator group, set the switches as indicated		
	<i>Switch</i>	<i>Setting</i>	
	TARGET-STANDBY—MISSILE	MISSILE	
	MODE	PULSE	
	SIGNAL LEVEL	00	
	PULSES	SINGLE	
	SLEW RATE	2500	
b	On the missile track control drawer, verify that the TEST switch is set to TEST		
c	Connect an oscilloscope to terminal 214 in the radar power supply group. (Terminal 215 is ground.) Sync the oscilloscope to the missile preknock pulse. (This pulse is available at J43 on the missile side of the signal distribution panel in the radar set group.) Use dc coupling on the oscilloscope.		
	A single pulse (repeated at the MTR system prf) is displayed on the oscilloscope. Pulse amplitude is at least 20 volts, peak-to-peak. Pulse width is $0.75 \pm 0.3$ microseconds between the 50-percent amplitude points.		
	Refer to figure 93.		
d	Set the MODE switch to CW		
	The oscilloscope displays a horizontal line at a level of $+13 \pm 2$ vdc.		
	Refer to figure 93.		
e	Set the MODE switch to PULSE and the TARGET-STANDBY-MISSILE switch to STANDBY		
	The oscilloscope displays a horizontal line at a level of $-13 \pm 2$ vdc		
	Refer to figure 93		
f	On the missile control indicator group, set the TARGET STANDBY MISSILE switch to MISSILE. Momentarily operate the RANGE SLEW switch to IN and then to OUT.		
	The displayed pulse moves to the right (occurs later) on the oscilloscope when the switch is operated to OUT, and moves to the left (occurs earlier) when the switch is operated to IN.		
	Refer to figure 93		
g	Set the PULSES switch to DOUBLE		
	A single pulse (repeated at the MTR system prf) is displayed on the oscilloscope.		
	Refer to figure 93		

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(U) Table 5-28. Nonperiodic Radar Test Set Group Checks—Continued

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Step	Operation	Normal indication	Corrective procedure
7.	Continued		
	h. Set the SIGNAL LEVEL switch to 40	A pair of pulses (repeated at the MTR system prf) is displayed on the oscilloscope. The pulse shapes are similar. The second pulse is delayed from the first by $6.5 \pm 1$ microseconds.	Refer to figure 93.
	i. Disconnect the oscilloscope		
8.	Check the transmission of the signal level commands.		
	a. Acquire the radar test set signal with the MTR by performing the procedures in table 2-16, steps 1 and 2.		
	b. With the SIGNAL LEVEL switch set to 00, observe the indication on the RECEIVED SIGNAL meter on the missile control-indicator group		
	c. Set the SIGNAL LEVEL switch in sequential steps from 00 to 09	For each step, the indication on the RECEIVED SIGNAL meter decreases.	Refer to figure 93
	d. Set the SIGNAL LEVEL switch to 00.		
	e. Set the SIGNAL LEVEL switch in sequentially increasing steps of 10 db until the minimum detectable signal level is reached.	For each 10-db step, the indication on the RECEIVED SIGNAL meter decreases.	Refer to figure 93
9.	Condition the missile control-indicator group for normal operation.		
	Set the switches on the missile control-indicator group as indicated		
	Switch	Setting	
	TARGET-STANDBY-MISSILE	STANDBY	
	SIGNAL LEVEL	70	

(U) Table 5-29. Nonperiodic Track Data Processor Checks

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Step	Operation	Normal indication	Corrective procedure
1.	Prepare for the track data processor checks.		
	Perform the procedures in table 2-30, steps 1 and 2.		
2.	Check the TRR/TTR parallax computation.		
	a. On the range radar power control-indicator, verify that the TEST OPERATE switch is set to TEST		
	Note. All switches in this step are located on the track data processor unless otherwise indicated.		

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(U) Table 5-29. Nonperiodic Track Data Processor Checks—Continued

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Step	Operation	Normal Indication	Corrective Procedure
2	Continued		
b	Set MODE SWITCH to TEST TRR and the BANK SELECTOR switch to BANK 1.		
c	Set the TRR/TTR PARALLAX (YDS) switches to 00		
	The POSITION DIFFERENCE (YDS) indicators indicate as follows:		
	$\Delta h = 00$		
	$\Delta x = 66$		
	$\Delta y = 40$		
			Refer to figure 78.1.
d	Using a dc voltmeter, measure the voltage between TP4 on printed wiring board A5 and ground (A4, TP1). Connect the positive meter lead to TP4.		
	The voltmeter indicates between +65.3 and +67.5 volts.		
			Refer to figure 78.1
e	Set the TRR/TTR PARALLAX (YDS) switches as indicated		
	Switch	Setting	
	N/S	N 50	
	E/W	E 50	
	UP/DN	DN 20	
	The POSITION DIFFERENCE (YDS) indicators indicate as follows:		
	$\Delta h = 00$		
	$\Delta x = 34$		
	$\Delta y = 40$		
			Refer to figure 78.1
	The voltmeter indicates between +33.6 and +35.2 volts.		
			Refer to figure 78.1.
f	Set the N, S, E/W, and UP/DN TRR PARALLAX (YDS) switches to S, W, and UP		
	The POSITION DIFFERENCE (YDS) indicators indicate as follows:		
	$\Delta h = 00$		
	$\Delta x = 98$		
	$\Delta y = 40$		
			Refer to figure 78.1.
	The voltmeter indicates between +97.0 and +99.8 volts,		
			Refer to figure 78.1.
g	Disconnect the dc voltmeter leads connected in d above		
h	Verify that the BANK SELECTOR switch is set to BANK 1 Set MODE SWITCH to TACTICAL		
i	Set the required site TRR/TTR parallax on the TRR/TTR PARALLAX (YDS) switches.		

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(U) Table 5-29. Nonperiodic Track Data Processor Checks--Continued

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Step	Operation	Normal Indication	Corrective procedure
3.	Determine the source of data transmission errors.		
	<p><i>Note:</i> This step is to be performed only if data transmission errors between the TTR or MTR RSPU assemblies and the track data processor are suspected or detected.</p>		
	a.	Set the track data processor MODE SWITCH to the positions where data transmission errors are suspected or have been detected	
	b.	Observe the red LED indicator on printed wiring board A4 in the track data processor	
		The LED indicator is not illuminated.	The LED illuminating or flickering indicates that a data transmission error exists between the RSPU and track data processor. Perform the procedures in table 3-19, step 6.
		<p><i>Note:</i> If data transmission errors are suspected and the LED is not illuminated, the fault is within the track data processor. Proceed to step 4 below.</p>	
			Refer to figure 78.1.
	c.	Perform step 2h and i above.	
4.	Identify the track data processor error messages.		
	a.	On the track data processor, observe the $\Delta x$ and $\Delta y$ POSITION DIFFERENCE (YDS) indicators.	
		The $\Delta x$ indicator indicates EE.	If an EE indication is not present, the POSITION DIFFERENCE (YDS) indicators are not displaying an error message.
		The $\Delta y$ indicator indicates a number between 01 and 09.	Refer to the error messages listed in b below.
	b.	Interpretation of the track data processor error messages as listed below.	
	$\Delta x$ Indication	$\Delta y$ Indication	Explanation
	00	01	Indicates the microcomputer cannot detect any front panel mode switch condition or it detects multiple mode conditions. A TDP FAULT signal will be initiated. When the fault is cleared, the error message is automatically cleared.
	00	02	Indicates the microcomputer detected an unused front panel mode switch condition. Usually indicates the BANK switch is improperly set. A TDP FAULT signal will be initiated. When the fault is cleared, the error message is automatically cleared.

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(U) Table 5-29. Nonperiodic Track Data Processor Checks—Continued

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Step	Operation	Normal indication	Corrective procedure
4.	Continued		
	$\Delta h$ Indication	$\Delta y$ Indication	Explanation
	00	03	Indicates that 3 or more out of 25 cycles of the serial data receiver output data contain the error message bit in an active state. This error message can occur only in the TEST SERIAL DATA REC, SIM TRACK, or TACTICAL modes. Each time an error occurs, a TDP FAULT fault signal is initiated for approximately 1/2 second. The error message can be cleared by changing switch modes or by pushing the RESET switch.
	00	04	Indicates that 3 or more coordinate select codes are out of order in 25 cycles of the serial data receiver output. This error message can occur only in the TEST SERIAL DATA REC, SIM TRACK, or TACTICAL modes. Each time an error occurs, a TDP FAULT signal is initiated for approximately 1/2 second. The error message can be cleared by changing switch modes or by pushing the RESET switch.
	00	05	Indicates that data is present at the serial data receiver output, but the contents detected by the microcomputer are not of the expected bit test pattern. The error message is used only in the TEST SERIAL DATA REC mode. A TDP FAULT signal is not initiated with the error message. The error message is cleared automatically if a correct data pattern is detected.
	00	06	Indicates that no data or excessively slow RSPU data is present at the serial data receiver output. The error message can occur only in the TEST SERIAL DATA REC, SIM TRACK, or TACTICAL modes. The error message takes precedence over all other errors except error 09. A TDP FAULT signal is initiated only in the TACTICAL mode. The error message is cleared automatically whenever proper data is received.
	00	07	Indicates that a problem exists in the circuitry associated with the data error bit from the serial data receiver to the microcomputer or in the circuitry associated with the CRC select bit from the microcomputer to the serial data receiver. The error message can occur only in the TEST SERIAL DATA REC mode. A TDP FAULT signal is not initiated with the error message. The error message is cleared whenever the fault is removed.

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(U) Table 5 29. Nonperiodic Track Data Processor Checks—Continued

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Step	Operation	Normal indication	Corrective procedure														
4.	Continued																
	$\Delta h$ Indication	$\Delta y$ Indication	Explanation														
	00	08	Indicates that the required count of target slant range ( $D_T$ ) data is not available. Whenever the microcomputer does not detect a select mode of $D_T$ within 39 inputs, the error message is generated. The error message can occur in the TEST SERIAL DATA REC, SIM TRACK, or TACTICAL modes. Each time an error occurs, a TDP FAULT signal is initiated for approximately 1/2 second. The error can be cleared by pushing the RESET switch or by changing switch modes.														
	(yz)	09	The microcomputer performs some track data processor tests during the start-up sequence after each reset. Any problems detected result in initiating an error message. The specific problem detected is identified by the individual bits of a 6-bit hexadecimal code displayed in the $\Delta h$ display. The bit sequence assignments are														
			<table><tr><th>Hexadecimal bit position</th><th>Detected error</th></tr><tr><td>0</td><td>RAM</td></tr><tr><td>1</td><td>PROM NUMBER 0</td></tr><tr><td>2</td><td>PROM NUMBER 1</td></tr><tr><td>3</td><td>PROM NUMBER 2</td></tr><tr><td>4</td><td>PROM NUMBER 3</td></tr><tr><td>5</td><td>CPU</td></tr></table>	Hexadecimal bit position	Detected error	0	RAM	1	PROM NUMBER 0	2	PROM NUMBER 1	3	PROM NUMBER 2	4	PROM NUMBER 3	5	CPU
Hexadecimal bit position	Detected error																
0	RAM																
1	PROM NUMBER 0																
2	PROM NUMBER 1																
3	PROM NUMBER 2																
4	PROM NUMBER 3																
5	CPU																
			A TDP FAULT signal is always initiated. This error message takes precedence over all other detected errors but can be cleared by changing switch modes. Pushing the RESET switch will not clear the error message if the failure is recurring.														
c.	Perform the procedures in step 2h and i above.																

(U) Table 5 30 Nonperiodic Solid-State Low Voltage Power Supply Voltage Checks—TTR, MTR and TRR

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Step	Operation	Normal indication	Corrective procedure
1.	Prepare for the low voltage checks. Perform the procedures in table 2-1.		
	Note. The following checks will require the use of a dc voltmeter		

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11. Table 5-30 Nonperiodic Solid State Low Voltage Power Supply Voltage Checks—TTR MTR and TRR—Continued

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Step	Operation	Normal indication	Corrective procedure
2.	Perform the TTR track low voltage power supply checks.		
a	On the TTR receiver subassembly in the radar set group, connect a dc voltmeter to measure the voltage between the test points specified below		
	<i>Test points</i>	<i>Voltage</i>	<i>On the TTR track low voltage power supply in the radar power supply group</i>
	TP-1 to TP-7 (GND)	+15v $\pm$ 0.3v	Adjust PS-1 ADJ POT variable resistor
	TP-2 to TP-7 (GND)	15v $\pm$ 0.3v	Adjust PS-2 ADJ POT variable resistor
	TP-5 to TP-7 (GND)	+5v $\pm$ 0.3v	Adjust PS-3 ADJ POT variable resistor
			Refer to figure 27 (MTR) or 58 (TTR).
b	On the TTR track low voltage power supply in the radar power supply group, connect a dc voltmeter to measure the voltage between the test points specified below		
	<i>Test points</i>	<i>Voltage</i>	
	TP-1 to TP-6 (GND)	+75v $\pm$ 5v	Refer to figure 27 (MTR) or 58 (TTR).
	TP-2 to TP-6 (GND)	-75v $\pm$ 5v	Refer to figure 27 (MTR) or 58 (TTR)
3	Perform the MTR track low voltage power supply checks.		
	Perform the procedures in step 2 above, substituting MTR for TTR		
4.	Perform the RSPU power supply checks.		
	Perform the procedures in table 5-9.		
5.	Perform the coder/track data processor power supply checks.		
	On the coder track data processor power supply, connect a dc voltmeter to measure the voltages between the test points specified below		
	<i>Test points</i>	<i>Voltage</i>	
	CODER +5V to GND	+5.2v $\pm$ 0.3v	Adjust PS-1 ADJ POT variable resistor
	TDP +15V to GND	+15v $\pm$ 0.3v	Adjust PS-2 ADJ POT variable resistor
	TDP +5V to GND	+5.5v $\pm$ 0.3v	Adjust PS-3 ADJ POT variable resistor
	TDP -15V to GND	-15v $\pm$ 0.4v	Refer to figure 27.
	TDP +12V to GND	+12v $\pm$ 0.3v	Refer to figure 27.
	TDP -12V to GND	-12v $\pm$ 0.3v	Refer to figure 27.
	TDP -5V to GND	-5v $\pm$ 0.3v	Refer to figure 27.
6.	Perform the TRR solid state low voltage power supply checks.		
	On the $\pm$ 15v, +5v power supply in the TRR control cabinet, connect a dc voltmeter to measure the voltages between the test points specified below		
	<i>Test points</i>	<i>Voltage</i>	
	TP-1 to TP-4 (GND)	+15v $\pm$ 0.3v	Adjust PS-1 ADJ POT variable resistor.
	TP-2 to TP-4 (GND)	-15v $\pm$ 0.4v	Refer to figure 82.
	TP-3 to TP-4 (GND)	+5v $\pm$ 0.3v	Adjust PS-2 ADJ POT variable resistor

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Table 7-30. *As periodic Solid State Low Voltage Power Supply Voltage Checks: TTR MTR and TRR -Continued*

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Step	Operation	Normal Indication	Corrective procedure
7	<b>Perform the radar test set control-power supply check.</b> On the radar test set control-power supply in the missile control indicator group, connect a dc voltmeter to measure the voltage between the test points specified below		
	<i>Test points</i>	<i>Voltage</i>	
	TP-4 to TP-1 (GND)	+5v $\pm$ 0.3v	Adjust the +5V control
	TP-2 to TP-1 (GND)	+15v $\pm$ 0.3v	Adjust the +15V control
	TP-3 to TP-1 (GND)	-15v $\pm$ 0.3v	Adjust the -15V control.
			Refer to figure 27
8.	<b>Perform the B-scope power supply checks.</b> On the ac restorer amplifier in the B-scope, connect a dc voltmeter to measure the voltages between the test points specified below		
	<i>Test points</i>	<i>Voltage</i>	<i>On the <math>\pm 15v</math>, +5v power supply on the slide in the upper center of the TTR console.</i>
	TP 2 to TP-3 (GND)	+15v $\pm$ 0.3v	Adjust the +15V control
	TP 3 to TP-5 (GND)	15v $\pm$ 0.3v	Adjust the -15V control
	TP-4 to TP-5 (GND)	+5v $\pm$ 0.3v	Adjust the +5V control.
9	<b>Perform the MTR and TTR antenna +15v and +5v power supply checks.</b>		
a	On the appropriate antenna support base set the ANTENNA switch to DISABLE and the BLOWER switch to OFF		
b	On the PS monitor, connect a dc voltmeter to measure the voltages between the test points specified below		
	<i>Test points</i>	<i>Voltage</i>	
	+15V to GND	+15v $\pm$ 0.3v	In the RF control-power supply group, adjust the +15v power supply ADJ POT variable resistor.
	15V to GND	-15v $\pm$ 0.3v	Refer to figure 58 (TTR) or figure 27 (MTR).
	+5V to GND	+5v $\pm$ 0.3v	In the track receiver-transmitter, adjust the +5v power supply ADJ POT variable resistor
c	Set the BLOWER switch to ON and the ANTENNA switch to NORMAL		
10	<b>Perform the TRR +48v, +15v, -15v, and +5v power supply checks.</b> <i>Note:</i> The +48v, +15v and -15v power supplies are located in the lower part of the pedestal in the TRR antenna. Access to the power supply adjustments can be made by removing the 100-Hz convenience outlet mounting panel on the pedestal. Prior to removing the panel, remove fuse F14 STBY PWR-L TILLY in the trailer range radar power control indicator. The center power supply is the -15v power supply; the right power supply is the +15v power supply.		
a	On the TRR antenna support base, set the ANTENNA switch to DISABLE and the BLOWER switch to OFF		

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U) Table 5-30 Nonperpetual Solid State Low Voltage Power Supply Voltage Checks-TTU, MTR  
and TRK-Continued

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Step	Operation	Normal indication	Corrective procedure
10.	<b>Continued</b>		
b	On the range RF control power supply group connect a dc voltmeter to measure the voltages between the test points specified below		
	<i>Test points</i>	<i>Voltage</i>	
	+48V to GND	+48v $\pm$ 3v	Refer to figure 82,
	+16V to GND	+15v $\pm$ 0.3v	Adjust the +15v power supply ADJ POT variable resistor
	-15V to GND	-15v $\pm$ 0.3v	Adjust the -15v power supply ADJ POT variable resistor
	+5V to GND	+5v $\pm$ 0.3v	Adjust the +5v power supply ADJ POT variable resistor.
c.	Reinstall the 400-Hz convenience outlet mounting panel.		
d	Set the BLOWER switch to ON and the ANTENNA switch to NORMAL		
e	Reinstall fuse F14 (STBY PWR UTILITY) in the range radar power control indicator		

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**CHAPTER 6 (C)****SPECIAL CHECK PROCEDURES**

(U) Table 6-1 Special Magnetron Tuning Drive Torque Check—TTR and MTR

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Step	Operation	Normal Indication	Corrective procedure
1.	<b>Prepare for the tuning drive torque check.</b>		
	a.	Perform the procedures in table 2-1.	
	b.	On the target antenna support base, set the ANTENNA switch to D-SABLE.	
	c.	Remove the knotted coupling to disconnect the flexible cable from the magnetron.	
2.	<b>Perform the tuning drive torque check.</b>		
	<i>Note:</i> The torque wrench adapter (TA 315 and TA 316) is located at the DSC, Electronic Shop 1.		
	a.	Connect the torque wrench adapter to the end of the flexible cable, and tighten the hexagon socket-head screws. Attach the torque wrench to the adapter.	
	b.	On the track RF control power supply, operate and hold the FREQUENCY TUNING switch. Set the FREQUENCY DECREASE/INCREASE switch to INCREASE, and then to DECREASE.	
	The torque wrench indication is within the limits of 1.5 and 3 inch pounds.		
		(1)	Remove the flexible cable from the tuning drive motor. Remove the three fillister-head screws and the cover on the magnetron tuning drive motor. Remove the magnetron tuning drive motor.
		(2)	With two 1/2-inch open-end wrenches (plotting arm adjusting wrench or equivalent), loosen the top jam nut and tighten the bottom jam nut to increase the torque, or loosen the bottom jam nut to decrease the torque.
		(3)	Install the magnetron tuning drive motor, and connect the flexible cable.
		(4)	Repeat a and b above.
		(5)	When the torque is within the limits specified, tighten the top jam nut, remove the flexible cable from the motor, and install the cover. Secure the cover with the three fillister-head screws.

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(U) Table 6.1 Special Magnetron Tuning Drive Torque Check—TTR and MTR—Continued

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Step	Operation	Normal indication	Corrective procedure
2.	<b>Continued</b>		
			(6) Connect the flexible cable to the magnetron tuning drive motor
	c. Disconnect the torque wrench and the adapter.		
	d. Set the FREQUENCY DECREASE INCREASE switch to INCREASE or DECREASE, and operate the FREQUENCY TUNE switch until the relative magnetron frequency d.a. on the magnetron indicates the same as the relative frequency dial on the magnetron tuning drive.		
	e. Connect the flexible cable to the magnetron.		

(U) Table 6.2 Special RSPU Power Checks—TTR and MTR

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Step	Operation	Normal indication	Corrective procedure
1.	<b>Perform the RSPU power checks.</b>		
	a. Perform the daily power check procedures in table 2-1.		
	b. On the TTR console:		
	1) Set the range MAN ACQUIRE AID—TRACK AID AUTO switch to MAN		
	(2) Set the azimuth MAN AID—AUTO switch to MAN		
	(3) Set the elevation MAN—AID AUTO switch to MAN		
	c. On the MTR console:		
	(1) Set the TEST switch to the TEST position		
	(2) Set the DISABLE switch to the down position		
	d. On the TTR RSPU front panel, set the MODE switch to OPR		
	e. On the MTR RSPU front panel, set the MODE switch to OPR		
	f. Check the voltages on the front panel of the RSPU		
	<i>Note:</i> Power supplies 1, 2, 3, and 4 referenced in (1) through (6) below are located on a slide in the top of the radar power supply group.		
	(1) Set the DC SELECT switch to 40V		
	<b>Meter reading = +40 ± 2 volts.</b>		Adjust power supply 4.
	(2) Set the DC SELECT switch to 28V		
	<b>Meter reading = +28 ± 1.4 volts.</b>		
			See table 2-1, step 7a (12) for MTR
			*For the TTR, move the secondary tap on transformer T3 in the +270V, -28V, +75V or +175V power supply located in the front center of the radar

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Step	Operation	Normal indication	Corrective procedure
1	<b>Continued</b>		
			power supply group. (Higher tap numbers produce increased voltages.)
			Refer to figure 58
	(3) Set the DC SELECT switch to 15V Meter reading = $+15 \pm 0.75$ volts.		Adjust power supply 3.
	(4) Set the DC SELECT switch to 12V Meter reading = $+12 \pm 0.6$ volts.		Adjust power supply 1
	(5) Set the DC SELECT switch to +150V/3. Meter reading = $+50 \pm 2.5$ volts.		Refer to figure 27 (MTR) or 58 (TTR).
	(6) Set the DC SELECT switch to +26V Meter reading = $+26 \pm 1.3$ volts.		Adjust power supply 2
	(7) Set the DC SELECT switch to +15V Meter reading = $+15 \pm 0.75$ volts.		Adjust power supply 3. Repeat (3) and (7) above.
	(8) Set the DC SELECT switch to +12V Meter reading = $+12 \pm 0.6$ volts.		Adjust power supply 1.
	(9) Set the DC SELECT switch to +5V Meter reading = $+5 \pm 0.25$ volts.		Perform the procedures in table 5-9.
	(10) Set the DC SELECT switch to -5V Meter reading = $-5 \pm 0.25$ volts.		Perform the procedures in table 5-9

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(U) Table 6-3 Special RSPU Tests: TTR

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Step	Operation	Normal indication	Corrective procedure
1.	<b>Perform the procedures in table 2-1.</b>		
2.	<b>Perform the TTR RSPU front panel checks.</b>		
	<b>a. On the TTR console</b>		
	(1) Set the azimuth MAN—AID—AUTO switch to MAN		
	(2) Set the elevation MAN—AID—AUTO switch to MAN		
	(3) Set the range MAN AID (QUIRE AID TRACK AID)—AUTO switch to MAN		
	(4) Set the TTR PULSE WIDTH switch to SHORT		
	(5) Set the TRR PULSE WIDTH switch to SHORT		
	(6) Set the MULTI BIN switch to OFF		
	(7) Set the TEST switch to TEST		
	(8) Set the AGC MANUAL switch to AGC		
	(9) Set the AGC LIN-LOG switch to AGC		
	(10) Set the RANGE TRACK switch to TTR		
	<b>b. On the TTR RSPU front panel:</b>		
	(1) Set the MODE switch to OPR		
	<i>Note:</i> If the unit under test has calibrated values on the thumbwheel switches, record the values for future reference. If it is a new unit, record the old unit calibration as a starting point.		
	(2) Set the AZIMUTH BORESIGHT thumbwheel switches to 0		
	(3) Depress the AZIMUTH BORESIGHT ENTER pushbutton.		
	<b>COORD DISPLAY is equal to the AZIMUTH BORESIGHT thumbwheel settings.</b>		
	(4) Set the ELEVATION BORESIGHT thumbwheel switches to 0		
	(5) Depress the ELEVATION BORESIGHT ENTER pushbutton.		
	<b>COORD DISPLAY is equal to the ELEVATION BORESIGHT thumbwheel settings.</b>		
	(6) Set the SHORT PULSE DELAY thumbwheel switches to 0		Refer to table 6-4
	(7) Depress the SHORT PULSE DELAY ENTER pushbutton.		
	<b>COORD DISPLAY is equal to the SHORT PULSE DELAY thumbwheel settings.</b>		
	(8) Set the LONG PULSE DELAY thumbwheel switches to 0.		Refer to table 6-4
	(9) Depress the LONG PULSE DELAY ENTER pushbutton.		
	<b>COORD DISPLAY is equal to the LONG PULSE DELAY thumbwheel settings.</b>		
	(10) Set the COORD SELECT switch to A-FCN		Refer to table 6-4
	<b>COORD DISPLAY is equal to the azimuth display on the radar control console.</b>		
			Refer to table 6-4

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(U, Table 6-3 Special RSPU Tests: TTR—Continued)

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Step	Operation	Normal indication	Corrective procedure
2.	<b>Continued</b>		
	(11) Set the COORD SELECT switch to E-FCN	COORD DISPLAY is equal to the elevation display on the radar control console.	Refer to table 6-4.
	(12) Set the COORD SELECT switch to D-FCN	COORD DISPLAY is equal to the range display on the radar control console.	Refer to table 6-4.
	<i>Note:</i> Set the computer condition switch on the computer control and status panel to ACTION		
	c. On the TTR radar control console:		
	(1) Position the range gate to 100,000 yards.		
	(2) Position the azimuth coordinate to 800 mils		
	(3) Position the elevation coordinate to 800 mils		
	d. On the TTR RSPU front panel:		
	(1) Set the COORD SELECT switch to R-FCN	COORD DISPLAY equals 70707 $\pm$ 70.	Refer to table 6-4.
	(2) Set the COORD SELECT switch to H-FCN	COORD DISPLAY equals 212121 $\pm$ 200	Refer to table 6-4.
	(3) Set the COORD SELECT switch to X-FCN	COORD DISPLAY equals 50000 $\pm$ 50.	Refer to table 6-4.
	(4) Set the COORD SELECT switch to Y-FCN	COORD DISPLAY equals 50000 $\pm$ 50.	Refer to table 6-4.
	(5) Set the AZIMUTH BORESIGHT, ELEVATION BORESIGHT, SHORT PULSE DELAY, and LONG PULSE DELAY switches to the readings recorded in b 1) above		
	<i>Note:</i> For new installations, set the azimuth and elevation boresights to zero. Set short pulse delay to 4300 and long pulse delay to 4700.		
3.	<b>Perform the TTR high voltage amplifier checks.</b>		
	a. On the TTR RSPU front panel:		
	(1) Set the MODE switch to MNL.		
	(2) Set the MICROPROCESSOR SELECT switch to PCS.		

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(U) Table 6-3. Special RSPU Tests—TTR—Continued

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Step	Operation	Normal indication	Corrective procedure
3.	<b>Continued</b>		
	(3) Set the DATA toggle switches to hexadecimal 00	7 DOWN      3 DOWN 6 DOWN      2 DOWN 5 DOWN      1 DOWN 4 DOWN      0 DOWN	
	(4) Set the TEST ADDRESS thumbwheel switches to A002.		
	(5) Depress the WRITE DATA pushbutton.		
	b. Perform the continuity checks using a multimeter		
	(1) Set the multimeter scale to 10 vdc		
	(2) Measure and record the voltage between TP5 of high voltage amplifier board A16 and ground as reading 1.		
	(3) Measure and record the voltage between TP9 of analog I/O board A14 and ground as reading 2.		
	<b>Voltage readings 1 and 2 are equal.</b>		Check the chassis wiring.
	14. On the RSPU front panel, simulate a range of 204,000 yards		
	(a) Set the DATA toggle switches to hexadecimal 3B	7 DOWN      3 UP 6 DOWN      2 DOWN 5 UP          1 UP 4 UP          0 UP	
	(b) Set the TEST ADDRESS thumbwheel switches to A402		
	(c) Depress the WRITE DATA pushbutton.		
	(d) Set the DATA toggle switches to hexadecimal 0E.	7 DOWN      3 UP 6 DOWN      2 UP 5 DOWN      1 UP 4 DOWN      0 DOWN	
	(e) Set the TEST ADDRESS thumbwheel switches to A403		
	(f) Depress the WRITE DATA pushbutton.		
	(5) Set the multimeter range to 150 vdc.		
	(6) Measure the voltage between TP1 of high voltage amplifier board A16 and chassis ground	<b>The voltage is between 120 and 130 volts.</b>	Adjust variable resistor R1 on A16
			Refer to figure 54.4.

(U) Table 6-3 Special RSPU Tests--TTR--Continued

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Step	Operation	Normal condition	Corrective procedure
3.	Continued		
	(7) On the RSPU front panel, simulate a range of 4,000 yards.		
	(a) Set the DATA toggle switches to hexadecimal 47		
		7 DOWN      3 DOWN	
		6 UP        2 UP	
		5 DOWN     1 UP	
		4 DOWN     0 UP	
	(b) Set the TEST ADDRESS thumbwheel switches to A402		
	(c) Depress the WRITE DATA pushbutton		
	(d) Set the DATA toggle switches to hexadecimal 00		
		7 DOWN      3 DOWN	
		6 DOWN      2 DOWN	
		5 DOWN      1 DOWN	
		4 DOWN      0 DOWN	
	(e) Set the TEST ADDRESS thumbwheel switches to A403.		
	(f) Depress the WRITE DATA pushbutton		
	(g) Set the multimeter range to 50 vdc		
	(h) Measure the voltage between TP1 of high voltage amplifier board A16 and chassis ground.		
		The voltage is between 20 and 30 volts.	
			Adjust variable resistor R1 on A16, and repeat the 204,000-yard check in (4) above.
4.	Perform the TTR analog conditioner AGC board A24 checks.		
	a. On the TTR console, verify that the panel switches are set in accordance with step 2a above		
	b. On the TTR RSPU front panel:		
	(1) Verify that the MODE switch is set to OPR.		
	(2) Set the COORD SELECT thumbwheel switches to D-FCN		
	c. On the TTR console, insure that the range readout has zero range drift. Adjust the range handwheel BAL control if necessary.		
	d. Check the ratio of the range change per handwheel turn in the short pulse mode:		
	(1) On the TTR RSPU front panel, set the MODE switch to MNL and back to OPR to reset range. Record the reading on COORD DISPLAY.		
	(2) On the TTR console, rotate the range handwheel clockwise 10 turns. Record the reading on COORD DISPLAY.		
		The final reading minus the initial reading divided by 10 equals $175 \pm 30$ ( $175 \pm 30$ yards/turn).	

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(U), Table 6-3. Special RSPU Tests: TTR - Continued

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Step	Operation	Normal indication	Corrective procedure
4.	Continued		<p>Adjust variable resistor R3 on A24. Repeat the procedures in (1) and (2) above. If R3 adjustment does not provide correct indications:</p> <p>(a) Rotate R3 counterclockwise 20 turns.</p> <p>(b) Rotate R3 clockwise 10 turns.</p> <p>(c) Adjust variable resistor R1 slowly counterclockwise if initial reading was high, or clockwise if initial reading was low, until a result of <math>175 \pm 30</math> yards is obtained.</p> <p>(d) Adjust variable resistor R3 until an acceptable value is obtained.</p> <p>Refer to figure 54.4</p> <p>e. Check the ratio of the range change per handwheel turn in the long pulse mode</p> <ol style="list-style-type: none"> <li>(1) On the TTR console, set TTR PULSE WIDTH switch to LONG</li> <li>(2) On the TTR RSPU front panel, set the MODE switch to MNL and back to OPR to reset range. Record the reading on COORD DISPLAY</li> <li>(3) On the TTR console, rotate the range handwheel clockwise 10 turns. Record the reading on COORD DISPLAY</li> </ol> <p>The final reading minus the initial reading divided by 10 equals <math>750 \pm 50</math> (750 <math>\pm</math> 50 yards/turn).</p> <p>Set the TTR PULSE WIDTH switch to SHORT and repeat d and e above for the best compromise readings.</p>
5.	Perform the TTR error-range exchange board A5 checks.		
	On the TTR RSPU front panel:		
	a. Set the MODE switch to MNL.		
	b. Set the MICROPROCESSOR SELECT switch to RTS.		
	c. Check the range analog voltage.		
	(1) Set the DATA toggle switches to hexadecimal 00.		
	7 DOWN	3 DOWN	
	6 DOWN	2 DOWN	
	5 DOWN	1 DOWN	
	4 DOWN	0 DOWN	
	(2) Set the TEST ADDRESS thumbwheel switches to 9004.		

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U: Table 6-3 Special RSPU Tests—TTR Continued

Step	Description	Normal indication	Test	Result
6.	<b>Continued</b>			
	(3) Depress the WRITE DATA pushbutton			
	4 Set the multimeter range to 10 vdc. Measure the voltage between TP15 on A5 and ground. <b>The voltage equals 0 volts.</b>			Adjust variable resistor R3 on A5 Refer to figure 54.3
	(5) Set the DATA toggle switches to hexadecimal 7F			
	7 DOWN      3 UP			
	6 UP        2 UP			
	5 UP        1 UP			
	4 UP        0 UP			
	(6) Set the multimeter range to at least -25 vdc			
	(7) Depress the WRITE DATA pushbutton.			
	(8) Measure the voltage between TP15 on A5 and ground. <b>The voltage equals -10 <math>\pm</math> 0.2 volts.</b>			Adjust variable resistor R4 on A5. Repeat the procedures in (1) through (8) above. Refer to figure 54.3
	(9) Set the DATA toggle switches to hexadecimal 81			
	7 UP        3 DOWN			
	6 DOWN    2 DOWN			
	5 DOWN    1 DOWN			
	4 DOWN    0 UP			
	(10) Set the multimeter range to at least +25 vdc			
	(11) Depress the WRITE DATA pushbutton. <b>The voltage at TP15 on A5 equals +10 <math>\pm</math> 0.2 volts.</b> <b>The voltage at TP3 on A24 equals +10 <math>\pm</math> 0.2 volts.</b>			Refer to figure 54.4.
6.	<b>Perform TTR—PCS Test No. 1 (Canned Data).</b>			
	a On the TTR console, set the TTR PULSE WIDTH switch to SHORT			
	b On the TTR RSPU front panel:			
	1 Set the MICROPROCESSOR SELECT switch to PCS.			
	(2) Set the MODE switch to TEST			
	(3) Insure that the ELEVATION BORESIGHT reading is recorded and then set the switches to zero. Depress the ELEVATION BORESIGHT ENTER pushbutton			
	(4) Insure that the AZIMUTH BORESIGHT reading is recorded and then set the switches to zero. Depress the AZIMUTH BORESIGHT ENTER pushbutton			

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(U) Table 6-3. Special RSPU Tests—TTR—Continued

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Step	Operation	Normal indication	Corrective procedure
6.	<b>Continued</b>		
	(5) Insure that the LONG PULSE DELAY reading is recorded and then set the switches to zero. Depress the LONG PULSE DELAY ENTER pushbutton		
	6 Insure that the SHORT PULSE DELAY reading is recorded and then set the switches to zero. Depress the SHORT PULSE DELAY ENTER pushbutton		
	(7) Set the TEST VIDEO switch to the on (up) position.		
	(8) Set the TEST ADDRESS thumbwheel switches to 0001.		
c	On the TTR console:		
	(1) Observe the range indicator	Test video is displayed.	Refer to figures 51 and 54.6.
	2 Rotate the range handwheel to position the range gate over the test video, then set the range MAN ACQUIRE AID TRACK AID—AUTO switch to AUTO.		
d.	On the TTR RSPU front panel.		
	(1) Depress the TEST INITIATE pushbutton	The LSB decimal point is on (test in progress).	
	2) Set the COORD SELECT thumbwheel switches to A-FCN	COORD DISPLAY equals 125000 $\pm$ 100.	Refer to table 6-4
	(3) Set the COORD SELECT thumbwheel switches to E-FCN	COORD DISPLAY equals 125000 $\pm$ 100.	Refer to table 6-4
	<i>Note</i> The decimal point is inoperative during a canned data test		
	(4) Set the COORD SELECT thumbwheel switches to D-FCN	COORD DISPLAY equals 31835 $\pm$ 100.	Refer to table 6-4
	(5) Set the COORD SELECT thumbwheel switches to R-FCN	COORD DISPLAY equals 9837 $\pm$ 100.	Refer to table 6-4
	(6) Set the COORD SELECT thumbwheel switches to H-FCN.	COORD DISPLAY equals 90831 $\pm$ 300.	Refer to table 6-4.
	(7) Set the COORD SELECT thumbwheel switches to X-FCN.	COORD DISPLAY equals 9356 $\pm$ 100.	Refer to table 6-4.
	(8) Set the COORD SELECT thumbwheel switches to Y-FCN	COORD DISPLAY equals 3040 $\pm$ 100.	Refer to table 6-4

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(U) Table 6-3. Special RSPU Tests: TTR. Continued

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Step	Operation	Normal indication	Corrective procedure
6.	<b>Continued</b>		
a	On the TTR console:		
	1. Set the TTR PULSE WIDTH switch to LONG. Observe the range indicator.	Test video is displayed.	Refer to figures 51 and 54.6
	(2) Rotate the range handwheel, to posit on the range gate over the test video, then verify that the range MAN—ACQUIRE AID: TRACK AID—AUTO switch is set to AUTO.		
f	On the TTR RSPU front panel:		
	(1) Set the COORD SELECT thumbwheel switches to A-FCN.	COORD DISPLAY equals 12800 $\pm$ 100.	Refer to table 6-4.
	(2) Set the COORD SELECT thumbwheel switches to E-FCN.	COORD DISPLAY equals 128000 $\pm$ 100.	Refer to table 6-4.
	(3) Set the COORD SELECT thumbwheel switches to D-FCN.	COORD DISPLAY equals 32290 $\pm$ 100.	Refer to table 6-4.
	(4) Set the COORD SELECT thumbwheel switches to R-FCN.	COORD DISPLAY equals 9978 $\pm$ 100.	Refer to table 6-4.
	(5) Set the COORD SELECT thumbwheel switches to H-FCN.	COORD DISPLAY equals 92133 $\pm$ 300.	Refer to table 6-4.
	(6) Set the COORD SELECT thumbwheel switches to X-FCN.	COORD DISPLAY equals 9489 $\pm$ 100.	Refer to table 6-4.
	(7) Set the COORD SELECT thumbwheel switches to Y-FCN.	COORD DISPLAY equals 3082 $\pm$ 100.	Refer to table 6-4.
	(8) Set the MODE switch to MNL and then to OPR.		
7	<b>Set the calibrated offsets in the thumbwheel switches.</b>		
a	Set the ELEVATION BORESIGHT thumbwheel switches to the calibrated offset recorded in step 2b 1, above. Depress the ELEVATION BORESIGHT ENTER pushbutton.	COORD DISPLAY indicates the calibrated value on the thumbwheel settings.	Refer to table 6-4.
b	Set the AZIMUTH BORESIGHT thumbwheel switches to the calibrated offset recorded in step 2b 1, above. Depress the AZIMUTH BORESIGHT ENTER pushbutton.		

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(U) Table 6-3. Special RSPU Tests—TTR Continued

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Step	Operation	Normal indication	Corrective procedure
7.	<b>Continued</b>		
		<b>COORD DISPLAY</b> indicates the calibrated value on the thumbwheel settings.	Refer to table 6-4
c	Set the <b>SHORT PULSE DELAY</b> thumbwheel switches to the calibrated offset recorded in step 2b 1. above. Depress the <b>SHORT PULSE DELAY ENTER</b> pushbutton.		
		<b>COORD DISPLAY</b> indicates the calibrated value on the thumbwheel settings.	Refer to table 6-4
d	Set the <b>LONG PULSE DELAY</b> thumbwheel switches to the calibrated offset recorded in step 2b 2. above. Depress the <b>LONG PULSE DELAY ENTER</b> pushbutton.		
		<b>COORD DISPLAY</b> indicates the calibrated value on the thumbwheel settings.	Refer to table 6-4
e	Set the <b>TEST VIDEO</b> switch to OFF.		
f	Set the range <b>MAN ACQUIRE AID—TRACK AID—AUTO</b> switch to <b>MAN</b> .		

(U) Table 6-4. Special RSPU Trouble Analysis Check—TTR and MTR

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Step	Operation	Normal indication	Corrective procedure
	Note: The RSPU power checks in table 6-3 should be performed prior to the trouble analysis checks.		
1.	<b>Perform the PCS CHSUM ROM test.</b>		
	Note: In the operate mode, if the FAULT LED (most significant decimal point) in the <b>COORD DISPLAY</b> on the TTR RSPU or MTR RSPU is blinking, proceed with additional testing.		
	On the TTR/MTR RSPU front panel:		
	a. Set the <b>MODE</b> switch to <b>TEST</b> .		
	b. Set the <b>MICROPROCESSOR SELECT</b> switch to <b>PCS</b> .		
	c. Set the <b>TEST ADDRESS</b> thumbwheel switches to 6082. Observe bit D0 in the word displayed in the upper right of the panel.		
		<b>Bit D0 is extinguished.</b>	Set the <b>TEST ADDRESS</b> thumbwheel switches to 6147. Observe bits D0 through D7 in the word displayed in the upper right of the panel. If any single bit is illuminated, replace PCS MEM board A11. If all bits are illuminated, replace PCS CPU board A10.
2.	<b>Perform the CCS CHSUM ROM test—TTR only.</b>		
	a. Set the <b>MICROPROCESSOR SELECT</b> switch to <b>CCS</b> .		

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UJ Table 6-4 Special RSPU Trouble Analysis Check TTR and MTR Continued

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Step	Operation	Normal indication	UJ or MTR indication
2.	Continued		
	b. Set the TEST ADDRESS thumbwheel switches to 6101. Observe bits D0 through D7 in the word displayed in the upper right of the panel.	All bits are extinguished.	If any single bit is illuminated, replace CCS MEM board A37. If all bits are illuminated, replace CCS CPU board A36.
3.	Perform the RTS CHSUM ROM test.		
	a. Set the MICROPROCESSOR SELECT switch to RTS.		
	b. Set the TEST ADDRESS thumbwheel switches to 6000. Observe bits D0 through D7 in the word displayed in the upper right of the panel.	All bits are extinguished.	If any single bit is illuminated, replace RTS MEM board A7. If all bits are illuminated, replace RTS CPU board A6.
4.	Perform the AES CHSUM ROM test.		
	a. Set the MICROPROCESSOR SELECT switch to AES.		
	b. Set the TEST ADDRESS thumbwheel switches to 602A. Observe bits D0 through D7 in the word displayed in the upper right of the panel.	All bits are extinguished.	If any single bit is illuminated, replace AES MEM board A3. If all bits are illuminated, replace AES CPU board A2.
5.	Perform the peripheral interface tests.		
	a. Set the MICROPROCESSOR SELECT switch to PCS.		
	b. Set the TEST ADDRESS thumbwheel switches to 6083. Observe bits D1, D2, and D3 of the word displayed in the upper right of the panel.	Bit D1 is extinguished (TTR only; disregard bit D1 for MTR).	Replace CCS peripheral interface board A35.
		Bit D2 is extinguished.	Replace RTS peripheral interface board A9.
		Bit D3 is extinguished.	Replace AES peripheral interface board A4.



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( Table 6-4 Special RSPU Trouble Analysis Check TTR and MTR Continued)

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Step	Operation	Normal indication	Corrective procedure
6.	<b>Perform the tuning and control test.</b>		
	On the TTR and MTR RSPU front panels set the TEST ADDRESS thumbwheel switches to 6085. Observe bit D0 of the word displayed in the upper right of the panel.		
	<b>Bit D0 is extinguished.</b>		
			Replace tuning and control board A14.
7.	<b>Perform the BCT fault isolation and correction procedures.</b>		
	a. Observe the word displayed in the upper right of the front panel.		
	<b>Bit D3 is extinguished.</b>		
			Perform the weekly data link check in table 2-6 of TM 9-1430-1251-12-1.
	<b>Bit D6 is illuminated.</b>		
			Proceed to step 8 below.
	b. On the TTR and MTR RSPU front panels:		
	1) Set the MICROPROCESSOR SELECT switch to AES.		
	2) Set the TEST ADDRESS thumbwheel switches to 6011. Observe bit D0 of the word displayed in the upper right of the panel.		
	<b>Bit D0 is extinguished.</b>		
			Replace AES CPU board A2.
	c. Observe bit D1.		
	<b>Bit D1 is extinguished.</b>		
			Replace AES CPU board A2.
8.	<b>Perform the RTS fault isolation and correction procedures.</b>		
	On the TTR and MTR RSPU front panels:		
	a. Set the MICROPROCESSOR SELECT switch to PCS.		
	b. Set the TEST ADDRESS thumbwheel switches to 6085. Observe bit D7 of the word displayed in the upper right of the panel.		
	<b>Bit D7 is extinguished.</b>		
			Proceed to step 9 below.
	c. Proceed to step 10 below.		
9.	<b>Perform the PCS fault isolation and correction procedures.</b>		
	On the TTR and MTR RSPU front panels:		
	a. Set the MICROPROCESSOR SELECT switch to PCS.		
	b. Set the TEST ADDRESS thumbwheel switches to 8C1A. Observe bit D3 of the word displayed in the upper right of the panel.		
	<b>Bit D3 is extinguished.</b>		
			Replace PCS MEM board A11 or PCS CPU board A10.

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Step	Operation	Normal indication	Corrective procedure
10.	<p><b>Perform the AES peripheral interface fault isolation and correction procedures.</b></p> <p>On the TTR and MTR RSPU front panels:</p> <p>a. Set the MICROPROCESSOR SELECT switch to AES</p> <p>b. Set the TEST ADDRESS thumbwheel switches to 8818. Observe bit D6 of the word displayed in the upper right of the panel:</p> <p style="padding-left: 40px;"><b>Bit D6 is extinguished.</b></p>		<p>Replace AES peripheral interface board A4</p>
11.	<p><b>Perform the CCS fault isolation and correction procedures.</b></p> <p>a. On the TTR RSPU front panel:</p> <p style="padding-left: 20px;">1) Set the MICROPROCESSOR SELECT switch to CCS.</p> <p style="padding-left: 20px;">2) Set the TEST ADDRESS thumbwheel switches to B12. Observe bit D2 of the word displayed in the upper right of the panel:</p> <p style="padding-left: 40px;"><b>Bit D2 is extinguished.</b></p> <p>b. On the TTR RSPU front panel, set the TEST ADDRESS thumbwheel switches to 611F. Observe bit D2 of the word displayed in the upper right of the panel:</p> <p style="padding-left: 40px;"><b>Bit D2 is extinguished.</b></p> <p>c. Observe bit D3 of the word displayed in the upper right of the panel:</p> <p style="padding-left: 40px;"><b>Bit D3 is extinguished.</b></p> <p>d. On the TTR RSPU front panel:</p> <p style="padding-left: 20px;">(1) Set the MICROPROCESSOR SELECT switch to PCS.</p> <p style="padding-left: 20px;">(2) Set the TEST ADDRESS thumbwheel switches to 9018. Observe bit D4 of the word displayed in the upper right of the panel:</p> <p style="padding-left: 40px;"><b>Bit D4 is extinguished.</b></p> <p>e. On the TTR RSPU front panel:</p> <p style="padding-left: 20px;">(1) Set the MICROPROCESSOR SELECT switch to CCS.</p> <p style="padding-left: 20px;">(2) Set the TEST ADDRESS thumbwheel switches to 9C01. Observe bit D4 of the word displayed in the upper right of the panel:</p> <p style="padding-left: 40px;"><b>Bit D4 is illuminated.</b></p>		<p>Energize the computer in the director station.</p> <p>Energize the MTR.</p> <p>Perform the BCT fault isolation tests and correction procedures. Refer to table 2-6 in TM 9-1430-1256-12-1</p> <p>Replace CCS MULTR board A38.</p> <p>In the director station, verify that power is applied to the computer</p>

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(U) Table 6-4. Special RSPU Trouble Analysis Check—TTR and MTR Continued

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Step	Operation	Normal indication	Corrective procedure
11	Continued		
	f. Observe bit D5 of the word displayed in the upper right of the panel.	Bit D5 is illuminated	Replace data link interface board A34
	g. Observe bit D6 of the word displayed in the upper right of the panel.	Bit D6 is illuminated	Repeat step 7 above
	h. Observe bit D7 of the word displayed in the upper right of the panel.	Bit D7 is illuminated	Replace data link interface board A34 and check the data link coaxial cable
	i. On the TTR RSPU front panel, set the TEST ADDRESS thumbwheel switches to 9018. Observe bit D3 of the word displayed in the upper right of the panel.	Bit D3 is extinguished.	Repeat step 7 above
		Observe bit D4 of the word displayed in the upper right of the panel.	Bit D4 is extinguished
			Replace CCS MULTR board A38
	j. On the TTR RSPU front panel, set the TEST ADDRESS thumbwheel switches to 6125. Observe bit D1 of the word displayed in the upper right of the panel.	Bit D1 is extinguished	Refer to figure 54-5
12.	Verify the trouble analysis. On the TTR and MTR RSPU front panels, observe the fault LED.	The LED is extinguished.	Refer problem to higher authority (DSU)
13.	Establish normal operation. On the TTR and MTR RSPU front panels, set the MODE switch to MNL and then to OPR.		

(U) Table 6-5. Special RSPU Manual Tests—TTR and MTR

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Step	Operation	Normal indication	Corrective procedure
1	Perform the opto/thumbwheel test. On the TTR and MTR RSPU front panels		
	a. Set the MODE switch to TEST		
	b. Set the MICROPROCESSOR SELECT switch to PCS		
	c. Set the TEST ADDRESS thumbwheel switches to 9C00		

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Step	Operation	Normal indication	Corrective procedure
1.	Continued		
	a. Depress the READ DATA pushbutton. TEST MONITOR bits 0 through 7 of the first two words are displayed in the upper right of the front panel. Record these as reading 1. Observe the LED display on opto thumbwheel board A40. Record these as reading 2.		
	<b>Reading 1 is equal to reading 2.</b>		Replace opto/thumbwheel board A40.
2.	Perform the relay and status test.		
	a. On the TTR and MTR RSPU front panels.		
	(1) Set the TEST ADDRESS thumbwheel switches to A000.		
	(2) Set the MODE switch to MNL.		
	(3) Set the DATA toggle switches to an alternate up down pattern		
	7 UP                3 UP 6 DOWN          2 DOWN 5 UP               1 UP 4 DOWN          0 DOWN		
	(4) Depress the WRITE DATA pushbutton.		
	(5) Set the TEST ADDRESS thumbwheel switches to A001.		
	(6) Depress the WRITE DATA pushbutton.		
	(7) Set the TEST ADDRESS thumbwheel switches to A002.		
	(8) Depress the WRITE DATA pushbutton.		
	<b>The pattern on A13 LED's corresponds to the data entered on the toggle switches.</b>		Replace relay and status board A13.
	b. On the TTR and MTR RSPU front panels.		
	(1) Set the TEST ADDRESS thumbwheel switches to A000.		
	(2) Set the DATA toggle switches to an alternate down up pattern		
	7 DOWN          3 DOWN 6 UP               2 UP 5 DOWN          1 DOWN 4 UP               0 UP		
	(3) Depress the WRITE DATA pushbutton.		
	(4) Set the TEST ADDRESS thumbwheel switches to A001.		
	(5) Depress the WRITE DATA pushbutton.		
	(6) Set the TEST ADDRESS thumbwheel switches to A002.		
	(7) Depress the WRITE DATA pushbutton.		
	<b>The pattern on A13 LED's corresponds to the data entered on the toggle switches.</b>		

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(U, Table 6-5 Special RSPU Manual Tests: TTR and MTR—Continued)

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Step	Operation	Normal indication	Correct indication
2.	<b>Continued</b>		
			Replace relay and status board A13
c.	On the TTR and MTR RSPU front panels		
	(1) Set the TEST ADDRESS thumbwheel switches to A000.		
	(2) Set the DATA toggle switches to the up position		
	7 UP                      3 UP		
	6 UP                      2 UP		
	5 UP                      1 UP		
	4 UP                      0 UP		
	(3) Depress the WRITE DATA pushbutton		
	(4) Set the TEST ADDRESS thumbwheel switches to A001.		
	(5) Depress the WRITE DATA pushbutton		
	(6) Set the TEST ADDRESS thumbwheel switches to A002.		
	(7) Depress the WRITE DATA pushbutton.		
	The pattern on A13 LED's corresponds to the data entered on the toggle switches.		
			Replace relay and status board A13.
d.	On the TTR and MTR RSPU front panels		
	(1) Set the TEST ADDRESS thumbwheel switches to A000.		
	(2) Set the DATA toggle switches to the down position.		
	7 DOWN                      3 DOWN		
	6 DOWN                      2 DOWN		
	5 DOWN                      1 DOWN		
	4 DOWN                      0 DOWN		
	(3) Depress the WRITE DATA pushbutton.		
	(4) Set the TEST ADDRESS thumbwheel switches to A001.		
	(5) Depress the WRITE DATA pushbutton.		
	(6) Set the TEST ADDRESS thumbwheel switches to A002.		
	(7) Depress the WRITE DATA pushbutton.		
	The pattern on A13 LED's corresponds to the data entered on the toggle switches.		
			Replace relay and status board A13
3.	<b>Perform the analog I/O test.</b>		
a.	Correct a dc voltmeter between TP1 (+) and TP6 (ground) on analog I/O board A14.		
b.	On the RSPU front panel.		
	(1) Set the TEST ADDRESS thumbwheel switches to A400		

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Step	Operation	Normal indication	Notes or procedure
3.	<b>Continued</b>		
	(2) Set the DATA toggle switches to hexadecimal 00.		
	7 DOWN	8 DOWN	
	6 DOWN	2 DOWN	
	5 DOWN	1 DOWN	
	4 DOWN	0 DOWN	
	(3) Depress the WRITE DATA pushbutton		
	(4) Set the TEST ADDRESS thumbwheel switches to A401		
	(5) Depress the WRITE DATA pushbutton		
	The voltmeter indicates 0 volts.		
			On analog I/O board A14, adjust variable resistor R2.
	(6) Set the TEST ADDRESS thumbwheel switches to A400		
	(7) Set the DATA toggle switches to hexadecimal FF.		
	7 UP	3 UP	
	6 UP	2 UP	
	5 UP	1 UP	
	4 UP	0 UP	
	(8) Depress the WRITE DATA pushbutton		
	(9) Set the TEST ADDRESS thumbwheel switches to A401.		
	(10) Set the DATA toggle switches to hexadecimal 07		
	7 DOWN	3 DOWN	
	6 DOWN	2 UP	
	5 DOWN	1 UP	
	4 DOWN	0 UP	
	(11) Depress the WRITE DATA pushbutton		
	The voltmeter indicates +5 volts.		
			On analog I/O board A14, adjust variable resistor R1.
	(12) Set the TEST ADDRESS thumbwheel switches to A400		
	(13) Set the DATA toggle switches to hexadecimal 00.		
	7 DOWN	3 DOWN	
	6 DOWN	2 DOWN	
	5 DOWN	1 DOWN	
	4 DOWN	0 DOWN	
	(14) Depress the WRITE DATA pushbutton.		
	(15) Set the TEST ADDRESS thumbwheel switches to A401.		

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(U) Table 6-5. *Special RSPU Manual Tests-- TTR and MTR--Continued*

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Step	Operation	Normal indication	Corrective procedure
3.	<b>Continued</b>		
	(16) Set the DATA toggle switches to hexadecimal 08		
	7 DOWN	3 UP	
	6 DOWN	2 DOWN	
	5 DOWN	1 DOWN	
	4 DOWN	0 DOWN	
	(17) Depress the WRITE DATA pushbutton.		
	The voltmeter indicates -5 volts.		Replace the analog I/O board.
	c. Connect the voltmeter between TP9 (+) and TP6 (ground).		
	d. On the RSPU front panel.		
	(1) Set the TEST ADDRESS thumbwheel switches to A402.		
	(2) Set the DATA toggle switches to hexadecimal 00.		
	7 DOWN	3 DOWN	
	6 DOWN	2 DOWN	
	5 DOWN	1 DOWN	
	4 DOWN	0 DOWN	
	(3) Depress the WRITE DATA pushbutton.		
	(4) Set the TEST ADDRESS thumbwheel switches to A403.		
	(5) Depress the WRITE DATA pushbutton.		
	The voltmeter indicates 0 volts.		On analog I/O board A14, adjust variable resistor R11
	(6) Set the TEST ADDRESS thumbwheel switches to A402.		
	(7) Set the DATA toggle switches to hexadecimal FF		
	7 UP	3 UP	
	6 UP	2 UP	
	5 UP	1 UP	
	4 UP	0 UP	
	(8) Depress the WRITE DATA pushbutton.		
	(9) Set the TEST ADDRESS thumbwheel switches to A403.		
	(10) Depress the WRITE DATA pushbutton.		
	The voltmeter indicates +10 volts.		On analog I/O board A14, adjust variable resistor R10.
	e. Disconnect the voltmeter from TP9 and TP6		

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(U), Table 6-5 Special RSPU Manual Tests--TTR and MTR Continued

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Step	Operation	Normal indication	Corrective procedure
3.	Continued		
	f. On the RSPU front panel:		
	(1) Set the TEST ADDRESS thumbwheel switches to A002.		
	(2) Set the DATA toggle switches to hexadecimal 20		
	7 DOWN	3 DOWN	
	6 DOWN	2 DOWN	
	5 UP	1 DOWN	
	4 DOWN	0 DOWN	
	(3) Depress the WRITE DATA pushbutton.		
	(4) Set the DATA toggle switches to hexadecimal 00		
	7 DOWN	3 DOWN	
	6 DOWN	2 DOWN	
	5 DOWN	1 DOWN	
	4 DOWN	0 DOWN	
	(5) Set the TEST ADDRESS thumbwheel switches to A400.		
	(6) Depress the WRITE DATA pushbutton		
	(7) Set the TEST ADDRESS thumbwheel switches to A401		
	(8) Depress the WRITE DATA pushbutton		
	(9) Set the TEST ADDRESS thumbwheel switches to A402		
	(10) Depress the WRITE DATA pushbutton		
	(11) Set the TEST ADDRESS thumbwheel switches to A403.		
	(12) Depress the WRITE DATA pushbutton.		
	(13) Set the TEST ADDRESS thumbwheel switches to A400		
	(14) Depress and hold the READ DATA pushbutton		
	The LSB on the TEST MONITOR is hexadecimal FF or 00. (Blinking is acceptable.)		
			(1) On analog I/O board A14, adjust R7 while depressing the READ DATA pushbutton
			(2) Replace the analog I/O board.
	(15) Set the TEST ADDRESS thumbwheel switches to A401		
	(16) Depress and hold the READ DATA pushbutton		
	The LSB on the TEST MONITOR is hexadecimal FF or 00. (Blinking is acceptable.)		
			(1) On analog I/O board A14, adjust R7 while depressing the READ DATA pushbutton.
			(2) Replace the analog I/O board.

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(U, Table 6-5. Special RSPU Manual Tests—TTR and MTR -Continued)

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Step	Operation	Normal indication	Corrective procedure
<b>3.</b>	<b>Continued</b>		
	(17) Set the TEST ADDRESS thumbwheel switches to A402.		
	(18) Depress and hold the READ DATA pushbutton		
	The LSB on the TEST MONITOR is hexadecimal FF or 00. (Blinking is acceptable.)		
			(1) On analog I/O board A14, adjust R6 while depressing the READ DATA pushbutton
			(2) Replace the analog I/O board
	(19) Set the TEST ADDRESS thumbwheel switches to A403.		
	(20) Depress and hold the READ DATA pushbutton.		
	The LSB on the TEST MONITOR is hexadecimal FF or 00. (Blinking is acceptable.)		
			(1) On analog I/O board A14, adjust R6 while depressing the READ DATA pushbutton
			(2) Replace the analog I/O board.
	(21) Set the DATA toggle switches to hexadecimal FF		
	7 UP	3 UP	
	6 UP	2 UP	
	5 UP	1 UP	
	4 UP	0 UP	
	(22) Set the TEST ADDRESS thumbwheel switches to A400		
	(23) Depress the WRITE DATA pushbutton.		
	(24) Set the DATA toggle switches to hexadecimal 07		
	7 DOWN	3 DOWN	
	6 DOWN	2 UP	
	5 DOWN	1 UP	
	4 DOWN	0 UP	
	(25) Set the TEST ADDRESS thumbwheel switches to A401		
	(26) Depress the WRITE DATA pushbutton.		
	(27) Set the DATA toggle switches to hexadecimal FF		
	7 UP	3 UP	
	6 UP	2 UP	
	5 UP	1 UP	
	4 UP	0 UP	
	(28) Set the TEST ADDRESS thumbwheel switches to A402.		

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Table 6-3. Special RSPL Manual Tests—YTR and MTR—Continued

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Step	Operation	Normal indication	Corrective procedure
3.	<b>Continued</b>		
	(29) Depress the WRITE DATA pushbutton.		
	(30) Set the TEST ADDRESS thumbwheel switches to A403.		
	(31) Depress the WRITE DATA pushbutton.		
	(32) Set the TEST ADDRESS thumbwheel switches to A400.		
	(33) Depress and hold the READ DATA pushbutton.		
	<b>The LSB on the TEST MONITOR is hexadecimal FD, FE, or FF.</b>		
			(1) While depressing the READ DATA pushbutton, adjust variable resistor R8 on the analog I/O board for an indication of FE.
			(2) Replace the analog I/O board.
	(34) Set the TEST ADDRESS thumbwheel switches to A401.		
	(35) Depress and hold the READ DATA pushbutton.		
	<b>The LSB on the TEST MONITOR is hexadecimal 07.</b>		
			(1) While depressing the READ DATA pushbutton, adjust variable resistor R8 on the analog I/O board. Repeat (32) through (35) above.
			(2) Replace the analog I/O board.
	(36) Set the TEST ADDRESS thumbwheel switches to A402.		
	(37) Depress and hold the READ DATA pushbutton.		
	<b>The LSB on the TEST MONITOR is hexadecimal FD, FE, or FF.</b>		
			(1) While depressing the READ DATA pushbutton, adjust variable resistor R5 on the analog I/O board for an indication of FE.
			(2) Replace the analog I/O board.
	(38) Set the TEST ADDRESS thumbwheel switches to A403.		
	(39) Depress and hold the READ DATA pushbutton.		
	<b>The LSB on the TEST MONITOR is hexadecimal 03.</b>		
			(1) While depressing the READ DATA pushbutton, adjust variable resistor R5 on the analog I/O board. Repeat (36) through (39) above.
			(2) Replace the analog I/O board.
	(40) Set the MODE switch to OPR.		

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(U) Table 6-5 Special RSPL Manual Tests—TTR and MTR Continued

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Step	Operation	Normal indication	Corrective procedure
4.	<b>Perform the mode control and front panel interface tests.</b>		
	<i>a. On the TTR and MTR RSPU front panels:</i>		
	(1) Set the MODE switch to MNL.		
	(2) Set the MICROPROCESSOR SELECT switch to PCS.		
	(3) Set the TEST ADDRESS thumbwheel switches to 8400.		
	(4) Set the DATA toggle switches to hexadecimal 55.		
	7 DOWN	3 DOWN	
	6 UP	2 UP	
	5 DOWN	1 DOWN	
	4 UP	0 UP	
	(5) Depress the WRITE DATA pushbuttons.		
	On the TEST MONITOR, bits illuminate with the hexadecimal address (8400) appearing in the two left bytes and hexadecimal 55 appearing in the right byte.		
			(1) If the right byte is not 55, replace mode control board A41.
			(2) If the left bytes are not 8400, replace front panel interface board A42.
	<i>b. On the TTR RSPU, set the MODE switch to OPR.</i>		
5.	<b>Perform the high voltage amplifier board test.</b>		
	<i>a. On the TTR console, slew the range to 20,000 yards.</i>		
	<i>b. On the B-scope, depress the REFRAME pushbutton.</i>		
	The B-scope displays proper presentation centered at approximately 20,000 yards.		
			Perform the nonperiodic B-scope indicator checks in table 59, TM 9-1430-1255-12-1. Repeat step 5. If the indication is still abnormal, replace high voltage amplifier board A16.
	<i>c. Slew the range to 190,000 yards.</i>		
	The B-scope display is centered at approximately 190,000 yards.		
			Perform the nonperiodic B-scope indicator checks in table 59, TM 9-1430-1255-12-1. Repeat step 5. If the indication is still abnormal, replace high voltage amplifier board A16.

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Step	Operation	Normal operation	Corrective procedure
6.	<b>Perform the elevation input and display transmitter tests.</b>		
	a.	On the MTR and TTR RSPU front panels	
		(1) Set the COORD SELECT thumbwheel switches to E.FCN	
		(2) Set the MODE switches to OPR	
	b.	On the radar console, set the elevation MAN AID AUTO switch to AID and rotate the elevation handwheel 2 to 3 turns	
		COORD DISPLAY tracks the antenna elevation movement smoothly, without jumps.	
			(1) If the readout on the console or COORD DISPLAY does not change smoothly, observe A1 elevation input board LED's and observe the rotating bit pattern
			(2) If the bit pattern progresses smoothly but the readout is not changing properly, replace A39; if the bit pattern is not smooth, replace A1.
			(3) If the bit pattern does not progress smoothly, check incoming data.
			(4) Replace display transmitter board A39. Refer to figure 54.4
			(5) Repeat a and b above after replacing elevation input board A1 or display transmitter board A39 Refer to figure 54.2
	c.	Set the elevation MAN—AID—AUTO switch to MAN	
7.	<b>Perform the azimuth input and display transmitter tests.</b>		
	a.	On the TTR and MTR RSPU front panels, set the COORD SELECT thumbwheel switches to A.FCN	
	b.	On the radar console, set the azimuth MAN—AID—AUTO switch to AID and rotate the azimuth handwheel 2 to 3 turns.	
		COORD DISPLAY tracks the azimuth antenna movement smoothly, without jumps.	
			(1) If the readout on the console or COORD DISPLAY does not change smoothly, observe A22 azimuth input board LED's and observe the rotation of the bit pattern.

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(U), Table 8-5 Special RSPU Manual Tests: TTR and MTR—Continued

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Step	Description	Normal indication	Corrective procedure
7.	Continued		<p>(2) If the bit pattern progresses smoothly but the readout is not changing properly, replace A39; if the bit pattern is not smooth, replace A22.</p> <p>(3) If the bit pattern does not progress smoothly, check incoming data.</p> <p>(4) Replace display transmitter board A39. Refer to figure 54.4.</p> <p>(5) Repeat a and b above after replacing azimuth input board A22 or display transmitter board A39. Refer to figure 54.2.</p>
8.	Perform the error-range exchange, video processor, range down-counter, and acquisition decode tests.		<p>a. Set the azimuth MAN—AID—AUTO switch to MAN.</p> <p>a. On the appropriate IF test generator, set the OSC switch to ON, the MODE switch to PULSE, the PULSE WIDTH switch to SHORT, the SLEW RATE switch to 5, and the SLEW switch to the center (off) position.</p> <p>b. On the appropriate radar control console, set the TEST switch to TEST.</p> <p>c. On the target track control-power supply, set the TTR PULSE WIDTH switch to SHORT and the IND switch to R.</p> <p>d. Verify that the range MAN—AID—AUTO switch (MTR) and the MAN ACQUIRE AID—TRACK AID—AUTO switch (TTR) are set to MAN.</p> <p>e. Rotate the range handwheel to center the IF test pulse in the range notch.</p> <p>f. Set the range MAN—AID—AUTO switch (MTR) or MAN ACQUIRE AID—TRACK AID—AUTO switch (TTR) to AUTO.</p> <p>g. On the IF test generator, set the SLEW switch to OUT and then to IN, then set to the center (off) position, and observe the range indicator.</p> <p><b>The range gate tracks the IF signal continuously.</b></p> <p>(1) Replace error-range exchange board A5 and repeat steps 4 and 5 above.</p> <p>(2) Replace video processor board A25 and repeat steps 4 and 5 above.</p>

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Step	Operation	Normal indication	Corrective procedure
<b>B.</b>	<b>Continued</b>		
			(3) Replace range-down counter board A27 and repeat steps 4 and 5 above
			(4) Replace acquisition decode board A29 and repeat steps 4 and 5 above
	<i>h.</i> On the IF test generator, set the OSC switch to OFF		
	<i>i.</i> Set the range MAN AID AUTO switch MTR and the MAN ACQUIRE AID TRACK AID—AUTO switch (TTR) to MAN		
<b>9.</b>	<b>Perform the buffer interface tests for the TTR and MTR.</b>		
	<i>a.</i> On the TTR and MTR RSPU front panels		
	(1) Set the MODE switch to MNL		
	(2) Set the TEST ADDRESS thumbwheel switches to 9400		
	<i>b.</i> Insure that both radars are in the TEST mode		
	<i>c.</i> Set the TTR RSPU MIC ROIPROCESSOR SELECT switch to CCS		
	<i>d.</i> Set the MTR RSPU MIC ROIPROCESSOR SELECT switch to PCS		
	<i>e.</i> On the TTR RSPU front panel		
	(1) Set the DATA toggle switches to hexadecimal 00	7 DOWN      3 DOWN 6 DOWN      2 DOWN 5 DOWN      1 DOWN 4 DOWN      0 DOWN	
	(2) Depress the WRITE DATA pushbutton		
	<i>f.</i> On the MTR RSPU front panel depress the READ DATA pushbutton. On the TTR and MTR RSPUs, observe TEST MONITOR bits 0 through 7 of the first word displayed in the upper right of the front panel.		
	<b>The words are identical to the data set manually.</b>		
			Replace buffer interface board A3
	<i>g.</i> On the TTR RSPU front panel, set the DATA toggle switches to hexadecimal FF depress the WRITE DATA pushbutton, and repeat <i>f</i> above	7 UP          3 UP 6 UP          2 UP 5 UP          1 UP 4 UP          0 UP	

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(U) Table 6-6 Special RSPU Manual Tests—TTR and MTR Continued

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Step	Operation	Normal indication	Operative procedure
9.	<b>Continued</b>		
	h. On the TTR RSPU front panel, set the DATA toggle switches to hexadecimal AA depress the WRITE DATA pushbutton, and repeat f above		
	7 UP 3 UP		
	6 DOWN 2 DOWN		
	5 UP 1 UP		
	4 DOWN 0 DOWN		
	i. On the TTR RSPU front panel, set the DATA toggle switches to hexadecimal 55, depress the WRITE DATA pushbutton, and repeat f above		
	j. Perform the address interface buffer check on the TTR and MTR		
	1. While continually depressing the WRITE DATA pushbutton on the TTR RSPU front panel, write each address from 9400 through 941F on the TEST ADDRESS thumbwheel switches.		
	2. On the MTR RSPU front panel, read each address from 9400 to 941F by setting each address on the TEST ADDRESS thumbwheel switches while continually depressing the READ DATA pushbutton. For each address, observe on the TTR and MTR RSPUs TEST MONITOR bits 0 through 7 of the first two words displayed in the upper right of the front panels		
	<b>The words are identical to the data set manually.</b>		
	Replace buffer interface board AJ		
10.	<b>Perform the buffer interface tests for the MTR and TTR.</b>		
	a. On the MTR RSPU, set the DATA toggle switches to AA and perform the procedures in step 9j above, substituting MTR for TTR and TTR for MTR.		
	b. Set the MODE switches on the MTR and TTR RSPU front panels to OPR		

(U) Table 6-6 Special RSPU Confidence Check—TTR and MTR

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Step	Operation	Normal indication	Operative procedure
1.	<b>Perform PCS Test No. 1.</b>		
	a. Perform the procedures in table 2-1		
	b. For the TTR, perform the procedures in table 6-3, step 2a.		
	c. For the MTR, perform the procedures in table 6-7, step 2a.		
	d. On the TTR and MTR RSPU front panels:		
	(1) Set the MODE switch to TEST		
	(2) Set the MICROPROCESSOR SELECT switch to PCS.		
	(3) Record the BORESIGHT switch settings		
	(4) Set the ELEVATION BORESIGHT thumbwheel switches to zeros.		
	(5) Depress the ELEVATION BORESIGHT ENTER pushbutton.		
	(6) Set the AZIMUTH BORESIGHT thumbwheel switches to zeros		

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Step	Operator	Normal	Initial	Procedure
1.	Continued			
				(7) Depress the AZIMUTH BORESIGHT ENTER pushbutton 8 On the MTR RSPU, set the BEACON DELAY thumbwheel switches to zeros and depress the BEACON DELAY ENTER pushbutton (9) Set the SHORT PULSE DELAY and LONG PULSE DELAY thumbwheel switches to zeros. (10) Depress the SHORT PULSE DELAY ENTER and LONG PULSE DELAY ENTER pushbuttons. (11) Set the TEST VIDEO toggle switch to the up position (12) Rotate the range handwheel to position the range gate over the test video (13) Set the range MAN A/D - ALFO switch MTR and MAN ACQUIRE AID TRACK AID - AUTO switch (TTR) to AUTO (14) Set the TEST ADDRESS thumbwheel switches to 0001 (15) Depress the TEST INITIATE pushbutton and observe that the least significant digit decimal point on COORD DISPLAY is on. (16) Set the COORD SELECT thumbwheel switches to D-FCN On COORD DISPLAY, $D = 31835 \pm 100$ . Replace RTS CPU board A6 or RTS MEM board A7 e On the target track control power supply, set the TTR PULSE WIDTH switch to LONG On TTR RSPU COORD DISPLAY, $D = 32290 \pm 100$ . Replace RTS CPU board A6 or RTS MEM board A7 f On the TTR and MTR RSPU front panels, set the COORD SELECT thumbwheel switches to E-FCN COORD DISPLAY indicates $E = 128000 \pm 10$ . Replace AES CPU board A2 or AES MEM board A3 g On the TTR and MTR RSPU front panels, set the COORD SELECT thumbwheel switches to A-FCN COORD DISPLAY indicates $A = 128000 \pm 10$ . Replace AES CPU board A2 or AES MEM board A3. h On the TTR RSPU, set the COORD SELECT thumbwheel switches in sequence to R-FCN, H-FCN, X-FCN, Y-FCN and observe COORD DISPLAY $R = 9978 \pm 100$ $H = 92133 \pm 300$ $X = 9489 \pm 100$ $Y = 3082 \pm 100$ Replace CCS CPU board A36 or AES MEM board A3 i On the target track control power supply, set the TTR PULSE WIDTH switch to SHORT



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(U) Table 6-6 Special RSPU Confidence Check—TTR and MTR—Continued

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Step	Operation	Normal indication	Corrective procedure
1	<b>Continued</b>		
	j. On the TTR and MTR RSPU front panels, set the COORD SELECT thumbwheel switches in sequence to R FCN H-FCN X FCN Y-FCN and observe COORD DISPLAY	$R = 9837 \pm 100$ $H = 90831 \pm 300$ $X = 9356 \pm 100$ $Y = 3040 \pm 100$	Replace CCS CPU board A36 or AES MEM board A3.
	k. Depress the TEST INITIATE pushbutton.	The least significant digit decimal point extinguishes. (Disregard numerical digits.)	
	l. Set the range MAN AID AL TO switch (MTR and MAN ACQUIRE AID TRACK AID AUTO switch (TTR) to MAN		
2.	<b>Perform PCS Test No. 2.</b>		
	On the TTR and MTR RSPU front panels:		
	a. Set the TEST ADDRESS thumbwheel switches to 0002		
	b. Set the COORD SELECT thumbwheel switches to D-FCN		
	c. Depress the TEST INITIATE pushbutton.	COORD DISPLAY starts at 20000 and advances 1000 counts second.	Replace RTS MULTR board A8.
	d. Set the MODE switch to MNL and back to TEST		
3.	<b>Perform CCS Test No. 4.</b>		
	On the TTR RSPU front panel:		
	a. Set the MICROPROCESSOR SELECT switch to CCS.		
	b. Set the TEST ADDRESS thumbwheel switches to 0004		
	c. Observe and record the display on the TEST MONITOR LED's.		
	d. Depress the TEST INITIATE pushbutton.		
	e. Observe the display on the TEST MONITOR LED's.	The display is the same as that recorded in c above.	(1) On the range handwheel drive control, adjust the BAL control to stop any drift. (2) Replace data link board A34.
4.	<b>Perform AES Test No. 1.</b>		
	On the TTR and MTR RSPU front panels:		
	a. Set the MICROPROCESSOR SELECT switch to AES.		
	b. Set the TEST ADDRESS thumbwheel switches to 0000		
	c. Set the COORD SELECT thumbwheel switches to E-FCN		

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Step	Operation	Normal indication	Abnormal indication
4.	<b>Continued</b>		
	d. Depress the TEST INITIATE pushbutton	On COORD DISPLAY, E = 080000.	Replace AES CPU board A2
	e. Depress the TEST INITIATE pushbutton	The decimal point moves from the extreme right position to any other position. (Disregard numerical digits.)	
5.	<b>Perform AES Test No. 2.</b>		
	On the TTR and MTR RSPU front panels.		
	a. Set the TEST ADDRESS thumbwheel switches to 0001		
	b. Set the DATA toggle switches to hexadecimal 09		
		7 DOWN      3 UP	
		6 DOWN      2 DOWN	
		5 DOWN      1 DOWN	
		4 DOWN      0 UP	
	c. Depress the TEST INITIATE pushbutton	COORD DISPLAY starts at 80000 and advances 500 counts second	Replace AES CPU board A2
	d. Depress the TEST INITIATE pushbutton.	The decimal point moves from the extreme right position to any other position. (Disregard numerical digits.)	
6.	<b>Perform AES Test No. 3.</b>		
	On the TTR and MTR RSPU front panels		
	a. Set the TEST ADDRESS thumbwheel switches to 0002		
	b. Set the COORD SELECT thumbwheel switches to A-FCN		
	c. Set the DATA toggle switches to hexadecimal 00.		
		7 DOWN      3 DOWN	
		6 DOWN      2 DOWN	
		5 DOWN      1 DOWN	
		4 DOWN      0 DOWN	
	d. Depress the TEST INITIATE pushbutton.	On COORD DISPLAY, A = 560000.	Replace AES CPU board A2.
	e. Depress the TEST INITIATE pushbutton		

**CONFIDENTIAL***(U) Table 6-6. Special RSPU Confidence Check: TTR and MTR--Continued***UNCLASSIFIED**

Step	Operation	Normal indication	Corrective procedure
7.	<b>Perform AES Test No. 4.</b> On the TTR and MTR RSPU front panels: a. Set the TEST ADDRESS thumbwheel switches to 0003 b. Set the DATA toggle switches to hexadecimal 09: 7 DOWN 3 UP 6 DOWN 2 DOWN 5 DOWN 1 DOWN 4 DOWN 0 UP c. Depress the TEST INITIATE pushbutton COORD DISPLAY starts at 560000 and advances 500 counts. second. Replace AES CPU board A2. d. Depress the TEST INITIATE pushbutton		
8.	<b>Reestablish the boresight settings.</b> Enter the boresight settings recorded in step 1d 3 above on the thumbwheel switches and depress the ENTER pushbutton associated with each switch		
9.	<b>Restore normal operation.</b> Set the MODE switch to OPR		

*(U) Table 6-7. Special RSPU Tests--MTR***UNCLASSIFIED**

Step	Operation	Normal indication	Corrective procedure
1.	<b>Perform the procedures in table 2-1.</b>		
2.	<b>Perform the MTR RSPU front panel checks.</b> a. On the missile track control drawer: (1) Set the azimuth, elevation, and range MAN AID AUTO switches to MAN (2) Set the TEST switch to TEST (3) Set the DISABLE switch to the down position b. On the MTR RSPU front panel: (1) Set the MODE switch to OPR. Note: If the unit under test has calibration errors on the thumbwheel switches, record the values for future reference. If it is a new unit, record the old unit combinations as a starting point. (2) Set the AZIMUTH BORESIGHT thumbwheel switches to 0. (3) Depress the AZIMUTH BORESIGHT ENTER pushbutton. COORD DISPLAY is equal to the AZIMUTH BORESIGHT thumbwheel settings. Refer to table 6-4. 4) Set the ELEVATION BORESIGHT thumbwheel switches to 0.		

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Step	Operation	Normal indication	Corrective procedure
2.	<b>Continued</b>		
	(5) Depress the ELEVATION BORESIGHT ENTER pushbutton.	<b>COORD DISPLAY is equal to the ELEVATION BORESIGHT thumbwheel settings.</b>	Refer to table 6-4
	(6) Set the BEACON DELAY thumbwheel switches to 0		
	(7) Depress the BEACON DELAY ENTER pushbutton	<b>COORD DISPLAY is equal to the BEACON DELAY thumbwheel settings.</b>	Refer to table 6-4.
	(8) Set the COORD SELECT thumbwheel switches to A-FCN	<b>COORD DISPLAY is equal to the azimuth display on the MTR console.</b>	Refer to table 6-4
	(9) Set the COORD SELECT thumbwheel switches to E-FCN	<b>COORD DISPLAY is equal to the elevation display on the MTR console.</b>	Refer to table 6-4
	(10) Set the COORD SELECT thumbwheel switches to D-FCN	<b>COORD DISPLAY is equal to the range display on the MTR console.</b>	Refer to table 6-4
c.	On the missile track control drawer		
	(1) Position the range gate to 100,000 yards		
	(2) Position azimuth at 800 mils.		
	(3) Position elevation at 800 mils.		
d.	On the MTR RSPU front panel.		
	(1) Set the COORD SELECT thumbwheel switches to R-FCN	<b>COORD DISPLAY equals 70707 <math>\pm</math> 70.</b>	Refer to table 6-4
	(2) Set the COORD SELECT thumbwheel switches to H-FCN	<b>COORD DISPLAY equals 212121 <math>\pm</math> 212.</b>	Refer to table 6-4.
	(3) Set the COORD SELECT thumbwheel switches to X-FCN	<b>COORD DISPLAY equals 50000 <math>\pm</math> 50.</b>	Refer to table 6-4

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(U) Table 6-7 Special RSPU Tests MTR - Continued

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Step	Operation	Normal indication	Corrective procedure
2.	<b>Continued</b>		
	(4) Set the COORD SELECT thumbwheel switches to Y-FCN <b>COORD DISPLAY equals 50000 ± 50.</b>		
	Refer to table 6-4		
	(5) Set the AZIMUTH BORESIGHT, ELEVATION BORESIGHT, and BEACON DELAY switches to the readings recorded in step 2b 1 above. Depress the AZIMUTH BORESIGHT ELEVATION BORESIGHT, and BEACON DELAY ENTER pushbuttons.		
	Note: For new installations, set azimuth and elevation offsets to zero, set beacon delay to 4300		
3.	<b>Perform the continuity checks.</b>		
	a. Set the multimeter scale to 10 vdc		
	b. Measure and record the voltage at TP5 of high voltage amplifier board A16 as reading 1		
	c. Measure and record the voltage at TP10 of analog I/O board A14 as reading 2 <b>The voltages (readings 1 and 2) are equal</b>		
	Check the chassis wiring		
	d. Set the multimeter range to 150 vdc		
	e. Measure the voltage at TP1 of high voltage amplifier board A16 <b>The voltage indication is between 95 and 105 vdc.</b>		
	Adjust variable resistor R1 on A16		
4.	<b>Perform the MTR analog conditioner AGC board A24 checks.</b>		
	a. On the MTR console, verify that the panel switches are set in accordance with step 2a		
	b. On the MTR RSPU front panel, verify that the MODE switch is set to OPR. Set the COORD SELECT thumbwheel switches to D-FCN		
	c. On the MTR console, insure that the range readout has zero range drift. Adjust the range handwheel BAL control if necessary.		
	d. Check the ratio of range change per handwheel turn.		
	(1) On the MTR RSPU front panel, set the MODE switch to MEN and then to OPR to reset range. Record the reading on COORD DISPLAY		
	(2) On the MTR console, rotate the handwheel clockwise 10 turns. Record the reading on COORD DISPLAY		
	<b>The final reading minus initial reading divided by 10 equals 175 ± 25 (175 ± 25 yards/turn).</b>		
	Adjust variable resistor R3 on A24. Repeat the procedures in (1) and (2) above. If R3 adjustment does not provide correct indications.		
	(a) Rotate R3 counterclockwise 20 turns.		
	(b) Rotate R3 clockwise 10 turns.		

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Step	Operation	Normal indication	Corrective procedure
4	Continued		<p>(c) Adjust variable resistor R1 slowly counterclockwise if initial reading was high, or clockwise if initial reading was low, until a result of 175 <math>\pm</math> 25 yards is obtained.</p> <p>(d) Adjust variable resistor R3 until an acceptable value is obtained.</p> <p align="right">Refer to figure 21.4</p> <p>e. On the radar control console</p> <p>(1) Set the MTR TEST switch to the down position.</p> <p>(2) Set the MTR DISABLE switch to the down position.</p> <p>(3) Select a launcher position by depressing a SECTION switch and LAUNCHER switch e.g., Section A, Launcher 4).</p> <p>f. On the launcher position potentiometer rack, adjust the selected LPU designate RANGE—10 YARDS potentiometer to 0 yards.</p> <p>g. On the MTR RSPU front panel set the COORD SELECT thumbwheel switches to D-FCN</p> <p align="center"><b>COORD DISPLAY indicates 0 <math>\pm</math> 16 yards (display changes in 16-yard increments).</b></p> <p align="right">Adjust variable resistor R4 on A24</p> <p align="right">Refer to figure 21.4.</p> <p>h. Adjust the selected LPU designate RANGE—10 YARDS potentiometer to .0000 yards</p> <p align="center"><b>COORD DISPLAY on the MTR RSPU front panel indicates 20000 <math>\pm</math> 1000 yards.</b></p> <p align="right">Adjust variable resistor R2 on A24</p> <p align="right">Refer to figure 21.4.</p> <p><i>Note:</i> Repeat g and h above until both readings are within specifications</p>
5.	Perform the MTR error-range exchange board A5 checks.		<p>On the MTR RSPU front panel:</p> <p>a. Set the MODE switch to MNL.</p> <p>b. Set the MICROPROCESSOR SELECT switch to RTS.</p> <p>c. Check the range analog voltage.</p>

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RU, Table 6-7 Special RSPL Tests: MTR—Continued

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Step	Operation	Normal value, min	Calibration procedure
5.	<b>Continued</b>		
	(1) Set the DATA toggle switches to hexadecimal 00.		
	7 DOWN	3 DOWN	
	6 DOWN	2 DOWN	
	5 DOWN	1 DOWN	
	4 DOWN	0 DOWN	
	(2) Set the TEST ADDRESS thumbwheel switches to 9004.		
	(3) Depress the WRITE DATA pushbutton.		
	(4) Set the multimeter range to 10 vdc.		
	(5) Measure the voltage at TP15 on A5.		
	The voltage equals 0.		
			Adjust variable resistor R3 on A5
	(6) Set the DATA toggle switches to hexadecimal 7F		
	7 DOWN	3 UP	
	6 UP	2 UP	
	5 UP	1 UP	
	4 UP	0 UP	
	(7) Set the multimeter range to at least -25 vdc		
	(8) Depress the WRITE DATA pushbutton		
	(9) Measure the voltage at TP15 on A5		
	The voltage equals $-10 \pm 0.2$		
			Adjust variable resistor R4 on A5. Repeat the procedures in (5) through (9) above.
	(10) Set the DATA toggle switches to hexadecimal 81		
	7 UP	3 DOWN	
	6 DOWN	2 DOWN	
	5 DOWN	1 DOWN	
	4 DOWN	0 UP	
	(11) Set the multimeter range to at least +25 vdc.		
	(12) Depress the WRITE DATA pushbutton.		
	The voltage at TP15 on A5 equals $+10 \pm 0.2$ .		
			Adjust variable resistor R4 on A5
	The voltage at TP3 on A24 equals $+10 \pm 0.2$ .		
	Check the chassis wiring.		

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(U, Table 6-7 Special RSPU Tests: MTR - Continued)

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Step	Operation	Normal indication	Corrective procedure
6.	<b>Perform MTR—PCS Test No. 1 (Canned Data).</b>		
a	On the MTR RSPU front panel		
	(1) Set the MICROPROCESSOR SELECT switch to PCS.		
	(2) Set the MODE switch to TEST		
	(3) Insure that the ELEVATION BORESIGHT switch is set to zero, and depress the ELEVATION BORESIGHT ENTER pushbutton		
	(4) Insure that the AZIMUTH BORESIGHT switch is set to zero, and depress the AZIMUTH BORESIGHT ENTER pushbutton		
	(5) Insure that the BEACON DELAY switch is set to zero, and depress the BEACON DELAY ENTER pushbutton		
	(6) Set the TEST VIDEO switch to the on (up) position.		
	(7) Set the TEST ADDRESS thumbwheel switches to 0001		
b	On the MTR console observe the range indicator		
	Test video is displayed.		
	Using the range handwheel, position the range gate over test video. Set the range MAN—AID—AUTO switch to AUTO.		
c	On the MTR RSPU front panel.		
	(1) Depress the TEST INITIATE pushbutton.		
	The LSB decimal point is on (test in progress).		
	(2) Set the COORD SELECT thumbwheel switches to A-FCN		
	COORD DISPLAY equals 128000 $\pm$ 100.		Refer to table 6-4
	(3) Set the COORD SELECT thumbwheel switches to E-FCN		
	COORD DISPLAY equals 128000 $\pm$ 100.		Refer to table 6-4
	(4) Set the COORD SELECT thumbwheel switches to D-FCN		
	COORD DISPLAY equals 31835 $\pm$ 100.		Refer to table 6-4
	(5) Set the COORD SELECT thumbwheel switches to R-FCN		
	COORD DISPLAY equals 9837 $\pm$ 100.		Refer to table 6-4
	(6) Set the COORD SELECT thumbwheel switches to H-FCN		
	COORD DISPLAY equals 90831 $\pm$ 300.		Refer to table 6-4
	(7) Set the COORD SELECT thumbwheel switches to X-FCN		
	COORD DISPLAY equals 9358 $\pm$ 100.		Refer to table 6-4

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(U) Table 6-7. Special R&amp;PU Tests—MTR—Continued

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Step	Operation	Normal indication	Corrective procedure
6.	<b>Continued</b>		
	(8) Set the COORD SELECT thumbwheel switches to Y FCN COORD DISPLAY equals 3040 ± 100.		Refer to table 6-4
	(9) Set the MODE switch to MNL and then to OFF.		
7	<b>Set the calibrated offsets in the thumbwheel switches.</b>		
a	Set the ELEVATION BORESIGHT thumbwheel switches to the calibrated offset recorded in step 2b (1) above. Depress the ELEVATION BORESIGHT ENTER pushbutton. COORD DISPLAY indicates the calibrated value on the thumbwheel settings.		Refer to table 6-4
b	Set the AZIMUTH BORESIGHT thumbwheel switches to the calibrated offset recorded in step 2b (1) above. Depress the AZIMUTH BORESIGHT ENTER pushbutton. COORD DISPLAY indicates the calibrated value on the thumbwheel settings.		Refer to table 6-4
c	Set the BEACON DELAY thumbwheel switches to the calibrated offset recorded in step 2b (1) above. Depress the BEACON DELAY ENTER pushbutton. COORD DISPLAY indicates the calibrated value on the thumbwheel settings.		Refer to table 6-4
d	Set the TEST VIDEO switch to OFF.		

(U) Table 6-8. Special Antenna Reflector Tilt Checks—TTR and MTR

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Step	Operation	Normal indication	Corrective procedure
	<i>Note:</i> To minimize RF interference, insure that the MTR and TTR antennas are not simultaneously aimed at the radar test set mast or other common object.		
1.	<b>Prepare the TTR for the reflector tilt checks.</b>		
a.	Perform the procedures in table 2-1		
b.	On the target antenna control group, set the TEST switch to TEST		
c.	On the target test control, set the FREQUENCY control to 500 and set the switches as indicated		
	<i>Switch</i>	<i>Setting</i>	
	SIGNAL LEVEL	00	
	FREQ SELECT	LOCAL	
	MODE	CW	

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(U) Table 6-3. Special Antenna Reflector Tilt Checks—TTR and MTR—Continued

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Step	Operation	Normal indication	Corrective procedure
<b>1.</b>	<b>Continued</b>		
	d. On the target track control-power supply, set the switches as indicated		
	Switch	Setting	
	AGC—MANUAL	AGC	
	TTR PULSE WIDTH	SHORT	
	IND	R	
	e. On the target error voltage monitor, set the switches as indicated		
	Switch	Setting	
	(IF TEST)—ADJ	ADJ	
	RCVR TEST	AFC	
	BEACON—TARGET	BEACON	
	PRESET	2	
	f. On the target IF test generator, verify that the OSC switch is set to OFF		
	g. On the missile control-indicator group, set the TARGET—STANDBY—MISSILE switch to TARGET		
<b>2.</b>	<b>Prepare the MTR for the reflector tilt checks.</b>		
	a. Perform the procedures in table 2-1		
	b. On the missile track control drawer, set the TEST switch to TEST and the DISABLE switch to the down position.		
	c. On the missile control-indicator group, set the FREQUENCY control to 500 and set the switches as indicated.		
	Switch	Setting	
	TARGET—STANDBY—MISSILE	MISSILE	
	SIGNAL LEVEL	00	
	MODE	CW	
	d. On the missile track control-power supply, verify that the AGC—MANUAL switch is set to AGC		
	e. On the missile error voltage monitor, set the switches as indicated		
	Switch	Setting	
	(IF TEST)—ADJ	ADJ	
	RCVR TEST	AFC	
	PRESET	2	
	BEACON—TARGET	BEACON	
	f. On the missile IF test generator, verify that the OSC switch is set to OFF		
<b>3.</b>	<b>Acquire the radar test set in the CW mode.</b>		
	a. Position the appropriate antenna to the coordinates of the radar test set.		
	b. On the appropriate error voltage monitor, rotate the PRESET 2 COARSE control fully clockwise		

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1' Table 5-3. Special Antenna Reflector Tilt Checks—TTR and MTR Continued

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Step	Operation	Normal value	Abnormal procedure
3.	<b>Continued</b>		
c.	Adjust the PRESET 2 COARSE control, slowly counterclockwise until the BEACON AFC LOCK indicator illuminates. Adjust the control to obtain an indication between 45 and 55 on the RCVR TEST meter.		
d.	Hold the AFC SENS switch in the HI position and slowly adjust the PRESET 2 control to obtain an indication of 50 on the RCVR TEST meter.		
4.	<b>Perform the reflector tilt check.</b>		
a.	On the appropriate error voltage monitor set the (IF TEST)—ADJ switch to (IF TEST) and the RCVR TEST switch to (AZ).		
b.	Set the appropriate SIGNAL LEVEL switch to 35.		
c.	Position the antenna in azimuth to obtain a maximum indication on the RCVR TEST meter.		
d.	On the appropriate track control-power supply set the AGC—MANUAL switch to MANUAL. Adjust the GAIN control to obtain an indication of approximately 20 on the RCVR TEST meter.		
e.	With the antenna set to the elevation coordinate of the radar test set, slowly vary the antenna azimuth to obtain a maximum indication on the RCVR TEST meter.		
f.	Adjust the GAIN control to obtain an indication of 20 on the RCVR TEST meter.		
g.	Set the appropriate SIGNAL LEVEL switch to 00.		
h.	Very slowly, move the antenna in azimuth toward the coordinate of the radar test set to obtain a null dip on the RCVR TEST meter. The null is very narrow. Verify that the antenna elevation is still set to the radar test coordinate. The angle error meter or scope error trace can be used.		
	<b>The RCVR TEST meter indication is 20 or less.</b>		
	Perform the procedures in step 5 below.		
i.	Position the appropriate antenna to the coordinates of the radar test set.		
j.	Repeat a through h above for elevation, substituting elevation for azimuth.		
k.	Set the AGC—MANUAL switch to AGC.		
l.	Set the appropriate radar test set FREQUENCY control to 100.		
m.	On the appropriate error voltage monitor set the (IF TEST)—ADJ switch to ADJ and repeat steps 3 through 4, above. In step 4b above, set the SIGNAL LEVEL switch to 30.		
n.	Repeat k through m above for the FREQUENCY control values of 300, 700, and 900.		
o.	Proceed to step 6 below.		
5.	<b>Adjust the antenna reflector tilt.</b>		
a.	Set the appropriate radar test set FREQUENCY control to 500.		
b.	Verify that the appropriate SIGNAL LEVEL switch is set to 00.		
c.	On the appropriate error voltage monitor set the (IF TEST)—ADJ switch to ADJ and repeat steps 3 through 4, above. Position the antenna to obtain a minimum indication on the RCVR TEST meter.		

(U) Table 6-B Special Antenna Reflector Tilt Checks—TTR and MTR—Continued

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Step	Operation	Normal Indication	Corrective procedure
5.	<p><b>Continued</b></p> <p>d Remove any antenna drift by adjusting the appropriate BAL control on the handwheel drive control</p> <p><b>Caution:</b> Personnel should be aware that the antenna drive is energized. Do not stand on the antenna turntable. This can cause errors in the adjustment.</p> <p>e Loosen the eight setscrews which secure the track antenna reflector assembly support to the track receiver-transmitter</p> <p>f Perform step 4h above while alternately adjusting the azimuth and elevation tilt adjusting screws to obtain the lowest null dip on the RCVR TEST meter. Set the RCVR TEST switch to either (AZ) or (EL) to correspond with the tilt adjusting screw being adjusted.</p> <p style="text-align: center;">An RCVR TEST meter indication of less than 20 can be obtained for both the (AZ) and (EL) channels.</p> <p style="text-align: right;">(1) Repeat a through f above. (2) Contact the direct support unit.</p> <p>g Without moving the antenna, tighten the four accessible setscrews loosened in e above</p> <p>h Carefully elevate the antenna to 1,600 mils without using the reflector for leverage, and tighten the four remaining setscrews</p> <p>i Repeat a through h above</p>		
6.	<p><b>Reestablish the switch positions.</b></p> <p>a Set the appropriate SIGNAL LEVEL switch to 70 and the FREQ SELECT switch to REMOTE</p> <p>b On the appropriate error voltage monitor, set the (IF TEST) ADJ switch to ADJ and the PRESET switch to 1</p> <p>c Set the TARGET STANDBY MISSILE switch to STANDBY</p> <p>d On the appropriate track control power supply, set the AGC—MANUAL switch to AGC</p>		

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(1) Table 6-9 Special Simultaneous Tracking Checks TTR, MTR, and TRR

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Step	Operation	Normal indication	Corrective procedure
1	<b>Explanation of the intercept computer simultaneous track printout.</b>		
	<p><i>Note 1</i> A. coordinate data is reconstructed using RSPU X, Y, and H data. Reconstruction can cause small errors between actual RSPU and MTR TTR A, E, D, and R coordinate positions.</p> <p>2 The difference between the MTR and MTRC columns is due to parallax set into the intercept computer.</p> <p>3 Standard deviations are computed using the TTR/MTRC sampled differences and therefore represent the dispersion (jitter) of the position differences.</p> <p>4 The printout represents 300 RSPU data samples taken over a period of approximately 5.8 seconds. Three consecutive RSPU samples are used to compute an average data sample. One hundred average data samples are used to compute one printout sample.</p>		

TOY TIME		Position difference data (TTR minus MTRC)	Standard deviation (jitter)	TTR/TRR input data	Parallax corrected MTR input data	MTR input data
Julian day	046 1232 22	TTR MTRC	STD DEV	TTR/TRR	MTRC	MTR
Target AGC	TAGC(V)		.01	5.51		
Missile AGC	MAGC(V)		.02			2.41
Ground range	R(YDS)	10	.52	95261.42	95261.32	96131.40
X, Y, & H	DIF(RBP)	48.00				
Tolerance	X(YDS)	.05	.48	88483.90	88483.85	88383.85
X Coordinate	Y(YDS)	.13	.75	35289.37	35289.24	35189.24
Y Coordinate	H(YDS)	-.02	.64	9565.50	9565.51	9465.51
H Coordinate	D(YDS)	.09	.52	95740.48	95740.37	95601.16
Slant range	A(MILS)	0.00	.01	1213.45	1213.45	1214.05
Azimuth	E(MILS)	0.00	.01	101.94	101.94	101.02
Elevation						

2 DATA SAMPLES REJECTED AND 100 ACCEPTED THIS SET

Indicates number of bad data cycles transmitted to computer to obtain 100 good cycles. The number should be less than 10.

## 2. Analyze the intercept computer simultaneous track printout.

- Verify that the target selected meets the tracking criteria in table 4-27, step 8.
- Determine if a constant TTR, MTRC, D error exists. Determine if the error exists only in the TRR mode or for different TTR/TRR pulse width modes.

*Note.* The numbers below refer to the key numbers given in step 3 below.

(1) 1, 2, and 10

(2) Refer to step 6 below.

- Determine if a cyclic TTR, MTRC, D error exists (predictable lag and lead errors) in the TRR mode.

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*(L) Table 6-9 Special Simultaneous Tracking Checks—TTR, MTR, and TRR Continued*

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Step	Operation	Normal indication	Corrective procedure
2.	Continued		
d	Check the TTR-MTRC A and E angular data for omissions. Negative errors indicate the MTR data is larger than the TTR/TRR data.		(1) 3-16, 18-22, 24, 30, and 33-41 (2) Refer to step 4 below.
e	Determine if the TTR-MTRC A and E data has a cyclic error pattern. Attempt to correlate any cyclic pattern to the printed MTR and TTR/TRR A and E angular data.		10, 11, 16, 18, 20, 22, 34, 39, 40, and 42
f	Evaluate the TTR-MTRC, TTR/TRR, MTRC, and MTR R, X, Y, and H values to determine if any predominant errors or biases exist in any specific coordinate or in all coordinates and troubleshoot accordingly. For a properly functioning RSPU and intercept computer, the values are determined by the MTR and TTR radar D, A, and E RSPU inputs.		Refer to g below for corrective procedure key numbers.
g	Check the STD DEV (standard deviation) for the TAGC and MAGC data. Typically, the standard deviation does not exceed 0.5 volts.		25, 26, and 28-30
h	Note the A, E, and D coordinate standard deviations. It can be assumed that the maximum peak deviation is three to four times larger than the standard deviation.		(1) 6-9, 16, 18, 19, 20, 22-33, 35, 40, and 41 (2) Refer to step 5 below
i	Standard deviation data for R, X, Y, and H coordinates represents the dispersion of the sampled data. The X, Y, and H coordinate standard deviations typically do not exceed a value equal to one third of the error tolerance permitted for the X, Y, and H TTR-MTRC position differences.		Refer to h above for corrective procedure key numbers.
3.	Listing of problem areas which can affect simultaneous track results.		
Key no.	Possible problem		Corrective procedure
1.	MTR and TTR range zero		Tables 2-8 and 2-16.
2.	TRR range zero		Table 2-24
3.	High power servo amplifiers not balanced		Tables 3-6 and 3-11, step 2
4.	Servo error converter dc balance		Tables 3-6 and 3-11.
5.	Angle error modulator balance		Tables 3-6 and 3-11.
6.	Servo gain		Tables 2-10 and 2-19
7.	Incorrectly set AUTO rate		Tables 4-8 and 4-17.

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(U) Table 6-9 Special Simultaneous Tracking Checks—TTR, MTR and TRR—Continued

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Step	Operation	Normal indication	Corrective procedure
3.	Continued		
	Key		
	no. Possible problem		Corrective procedure
	8. IF test generator turned on		Check.
	9. Radar test set selected		Check.
	10. Incorrectly entered site parallax		Contact computer operator Check the parallax entered into the track data processor
	11. MTR and TTR antenna leveling		Table 2-3.
	12. MTR and TTR antenna bore-sight		Table 3-7
	13. MTR and TTR telescope collimation		Table 3-8
	14. MTR and TTR orientation		Table 3-20
	15. Defective intercept computer		Contact computer operator
	16. RSPU range and angle conversion		Tables 6-3 and 6-7
	17. Incorrect track data processor TRR range correction		Table 4-26.
	18. TTR and MTR antenna reflector tilt		Table 6-8.
	19. Incorrect antenna drive motor tachometer feedback		Refer to figures 18, 19, 52, and 53
	20. AL antenna drive motors not functioning properly		Refer to figures 18, 19, 52, and 53
	21. Servo preamplifier unbalance		Replace servo preamplifier
	22. Defective angle error encoders		Refer problems to direct support unit.
	23. Unstable response of the TTR or MTR receiver to target signal amplitude or IF center frequency shift		Refer to figures 17 and 48.
	24. Cross talk between sum, azimuth, and elevation channels		Refer to figures 17 and 48
	25. Noise in the digital communications link		Table 6-9, step 5.
	26. Tracking jitter due to excessive AGC noise		Refer to figures 17 and 48
	27. Tracking jitter due to noise pick-up in the servo chain		Refer to figures 18, 19, 52, and 53.
	28. Tracking noise due to excessive AFC jitter and target flaring		Tables 2-6 and 2-14.
	29. Tracking noise due to AC frame-neutral grounding problem		Refer problem to direct support unit
	30. Target jitter or bias due to masking or multipath reflections		Table 4-27, step 7
	31. Tracking jitter due to incorrectly switched angle error modulator bandpass filters		Refer to figures 18, 19, 52, and 53
	32. Tracking noise due to noise pick-up on dc lines to the high power servo amplifiers		Refer to figures 18, 19, 52, and 53
	33. Tracking bias or jitter due to wind		Check radome inflation.

(U, Table 6-9 Special Simultaneous Tracking Checks-TTR, MTR, and TRR-Continued)

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Step	Description	Normal indication	Corrective procedure
3	Continued		
	Key		
	no	Possible problem	Corrective procedure
34	Conductive material used within RF beam (such as safety rails, posts, and lightning protection)		Evaluate
35	External IF (TV) or RF interference		Refer problem to direct support unit
36	Ice on the radomes		Remove ice
37	TTR or MTR antenna not mechanically balanced		Refer problem to direct support unit
38	Damaged TTR or MTR antenna reflector or horn assembly cone		Refer problem to direct support unit
39	Mechanical binding of antenna in azimuth or elevation		Refer problem to direct support unit
40	Worn TTR or MTR antenna data bearings and gears		Refer problem to direct support unit
41	Bad TTR or MTR antenna turntable race		Refer problem to direct support unit
4.	Perform a simultaneous static track check of the parallel antenna data.		
a	On the target antenna control group, set the TEST switch to TEST		
b	On the target track control power supply, set the AGC-MANUAL switch to MANUAL. Adjust the GAIN control to obtain an indication of 20 on the TARGET SIGNAL STRENGTH meter		
c	On the missile track control drawer, set the TEST switch to TEST and the DISABLE switch to the down position		
d	On the missile track control power supply, set the AGC-MANUAL switch to MANUAL. Adjust the GAIN control to obtain an indication of 2 on the RECEIVED SIGNAL meter		
e	On the range radar power control indicator, set the TEST-OPERATE switch to TEST		
f	On the track data processor, set the BANK SELECTOR switch to BANK 1 and MODE SWITCH to SIM TRACK		
g	Have the computer operator perform the procedures in h through j below		
h	On the keyboard/display, enter 8 and depress CR		
i	Enter STK and depress CR		
j	Turn on the printer/poller only when data is available and a copy is required		
k	Obtain the TARGET TRACK status		
l	Set the TTR and MTR antenna elevation and azimuth to 800 mils		
m	On the radar power control, remove the MISSILE AZ and EL HP SERVO fuses and the TARGET AZ and EL HP SERVO fuses		



**CONFIDENTIAL**(U) Table 6-9. *Special Simultaneous Tracking Checks: TTR, MTR and TRR -Continued***CONFIDENTIAL**

Step	Operation	Normal indication	Corrective procedure
4	Continued		
n	Check the target and missile antenna azimuth and elevation	The azimuth and elevation are between 799 and 801 mils.	Replace fuses as required, and repeat <i>l</i> through <i>n</i> above
o	Set the target and missile ranges to 100,000 yards.		
p	On the MTR and TTR RSPU's, set the COORD SELECT switch to X, then to Y and then to H, and record the corresponding indications on COORD DISPLAY		
q	Turn on the intercept computer printer/plotter to print at least three samples		
r	Remove the printer/plotter printout and analyze the data	The A and E STD DEV values do not exceed 0.02 mils. The D, R, X, Y, and H STD DEV values do not exceed 1.5 yards.	Refer to step 3 above, specifically key numbers 8, 9, 15, 16, 22, 25, 26, and 29
		The TAGC and MAGC values are between 1.8 and 2.2 volts.	Refer to figures 17 and 48
		The TAGC and MAGC STD DEV values do not exceed 0.02 volts.	Refer to step 3 above, specifically key numbers 8, 9, 15, 25, 26, and 29.
		The TTR/TRR and MTR X, Y, and H values are within 2 yards of the respective RSPU values recorded in <i>p</i> above.	(1) Refer to step 3 above, specifically key number 10. (2) Repeat <i>p</i> and <i>q</i> above.
s	On the printout, note the TTR-MTRC X, Y, and H data	The track data processor $\Delta x$ , $\Delta y$ , and $\Delta h$ values are within 2 yards of the noted respective TTR-MTRC X, Y, and H data.	(1) Refer to step 3 above, specifically key number 10. (2) Repeat <i>p</i> and <i>q</i> above.
t	Replace the fuses removed in <i>m</i> above.		
u	Turn on the intercept computer printer/plotter to print at least three samples.		

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(U) Table 6-9. *Special Simultaneous Tracking Checks—TTR, MTR, and TRR—Continued***CONFIDENTIAL**

Step	Operation	Normal indication	Corrective procedure
4	<b>Continued</b>		
	v Remove the printer/plotter printout and analyze the data.		
	The A and E STD DEV values do not exceed 0.05 mils.		
			(1) Verify that the antenna servos are not drifting
			(2) Refer to step 3 above, specifically key numbers 6-9, 15, 16, 19, 20, 22, 25, 27, 29, 32, 33, and 35
	w Notify the computer operator that the check has been completed		
	x On the range radar power control indicator, set the TEST OPERATE switch to OPERATE		
	y On the in scale track and target track control power supplies, set the AGC MANUAL switches to AGC		
	z On the track data processor, set MODE SWITCH to FACILICAL		
5	<b>Perform a simultaneous track check of the radar test set to evaluate tracking noise</b>		
	a On the track synchronizer, verify that the TEST switch is set to NORMAL. Disconnect coaxial connector P28 from J1		
	b On the test adapter in the target radar control console, disconnect P99 from J1. Connect P99 to J1 on the track synchronizer		
	c On the signal distribution panel in the radar set group, connect a coaxial cable between M PREKNOCK J43 (MTR) and CP1A1 VIDEO TEST (TTR)		
	d Obtain the TARGET TRACK status		
	e Acquire the radar test set in the TTR short pulse mode using the procedures in table 2-7, steps 1 and 2.		
	f Acquire the radar test set in range using the MULT. BIN mode		
	g On the TTR target test control, set the SLEW RATE switch to 500 and operate the RANGE SLEW switch to obtain approximately 20 000 yards range. It may be necessary to use a slower SLEW RATE.		
	h Acquire the radar test set with the MTR using the procedures in table 2-15, steps 1 and 2. Leave the TARGET STANDBY-MISSILE switch in the TARGET position. To keep from changing the PRESET 1 adjustments, the PRESET switch on the error voltage monitor can be set to 2 or 3 and the PRESET 2 control, or PRESET 3 control, respectively, can be used.		
	i AUTO track the radar test set in elevation, azimuth, and range with both the TTR and MTR		
	j On the target test control, set the SIGNAL LEVEL switch to obtain an indication as close as possible to 20 on the TARGET SIGNAL STRENGTH meter		
	k Have the computer operator perform the procedures in i through j below		

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Table 6-9. Special Simulations Tracking Checks (TK, TR, and TH) Continued

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Step	Operation	Normal values	Correct procedure
5	<b>Continued</b>		
1	On the keyboard/display, enter 6 and depress CR		
m	Enter STK and depress CR		
n	Turn on the intercept computer printer/plotter to print at least 3 samples		
o	Remove the printer/plotter printout and analyze the data.		
	The A and E STD DEV values do not exceed 0.3 m.ds. The D, R, X, and H STD DEV values do not exceed 2.0 yards. These tolerances are met by at least 90 percent of the printout data samples analyzed.		
	Note: A signal indication less than 20 on the TARGET SIGNAL STRENGTH meter will increase the STD DEV values.		
	For troubleshooting purposes, any suspected coordinate problem can be individually evaluated by placing any combination of the coordinates in a manual mode. The radar test set signal level can also be varied. For additional information, refer to step 3 above, specifically key numbers 6, 7, 8, 19, 22, 25, 26, 27, 28, 29, 32, and 35. If a D STD DEV is excessive, perform step 6 below.		
p	If desired, perform the test with the TTR in the long pulse mode.		
	The D, R, X, Y, and X STD DEV values do not exceed 4 yards.		
q	Set the MTR and TTR azimuth, elevation, and range switches to MAN.		
r	Set the TARGET STANDBY-MISSILE switch to STANDBY.		
s	Set the target test control SIGNAL LEVEL switch to 70.		
t	On the target error voltage monitor, set the BEACON-TARGET switch to TARGET.		
u	Disconnect the coaxial cable added in c above.		
v	Disconnect the coaxial cable from J1 of the track synchronizer and reconnect coaxial connector P26, disconnected in a above. Reconnect coaxial connector P99 to J1 of the test adapter.		
6	<b>Perform a simultaneous track check using the IF test pulse to evaluate tracking accuracy and standard deviations (utter).</b>		
a	On the track synchronizer, verify that the TEST switch is set to NORMAL. Disconnect coaxial connector P26 from J1.		
b	On the test adapter in the target radar control console, disconnect coaxial connector P99 from J1. Connect P99 to J1 of the track synchronizer.		
c	On the signal distribution panel in the radar set group, connect a coaxial cable between M PREKNOCK J43 (MTR) and CP1A, I VIDEO TEST (TTR).		

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(U) Table 6-9. Special Simultaneous Tracking Checks—TTR, MTR, and TRR—Continued

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Step	Operation	Normal indication	Corrective procedure
6.	Continued		
■.	On the target IF test generator, connect a T-connector between J5 ATTN IN and P10.		
e.	On the missile IF test generator, set 0-90 dB ATTENUATOR to 30. Disconnect coaxial connector P10 from J5 ATTN IN. Connect a coaxial cable between the T-connector added in d above and J5 ATTN IN.		
f.	On the target IF test generator, set the switches as indicated below:		
	Switch	Setting	
	OSC	ON	
	MODE	PULSE	
	SLEW	Center (off)	
	0-90 dB ATTENUATOR	30	
	PULSE WIDTH	SHORT	
g.	On the target antenna control group, set the switches as indicated:		
	Switch	Setting	
	TEST	TEST	
	MULTI BIN	OFF	
	RANGE TRACK	TTR	
	AGC-LIN-LOG	AGC	
h.	On the target track control-power supply, verify that the AGC-MANUAL switch is set to AGC and the TTR PULSE WIDTH switch is set to SHORT.		
i.	On the missile track control drawer, set the TEST switch to TEST and the DISABLE switch to the down position.		
j.	On the missile track control-power supply, verify that the AGC-MANUAL switch is set to AGC.		
k.	On the range radar power control-indicator, set the TEST-OPERATE switch to TEST.		
l.	On the track data processor, set the BANK SELECTOR switch to BANK 1 and MODE SWITCH to SIM TRACK. Set the MTR/TTR PARALLAX switches to 000.		
m.	Have the computer operator perform the procedures in n through p below.		
n.	On the keyboard/display, enter 6 and depress CR.		
o.	Enter STK and depress CR.		
p.	Turn on the printer/plotter only when data is present and a copy is required.		
q.	Obtain the TARGET TRACK status.		
r.	Acquire the IF test pulse in the AUTO range mode for both the MTR and TTR.		
s.	Note the range displayed by the TTR RSPU.		
t.	On the MTR RSPU, record the setting of the BEACON DELAY switches.		

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(U) Table 6-9. Special Simultaneous Tracking Checks—TTR, MTR, and TRR—Continued

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Step	Operation	Normal indication	Corrective procedure
6.	<b>Continued</b>		
u.	Adjust the BEACON DELAY switches and depress the ENTER switch until COORD DISPLAY indicates the TTR RSPU range noted in <i>s</i> above.		
v.	On the target IF test generator, set the SLEW RATE to 2500, operate the SLEW switch to the OUT position, and slew the IF test pulse to maximum range.		
w.	Reacquire the IF test pulse in the AUTO range mode for both the MTR and TTR.		
x.	Position the MTR and TTR antenna elevation and azimuth to 0 mils.		
y.	On the TTR and MTR IF test generators, adjust the attenuator switches until values as close as possible to 20 and 2 are obtained on the TTR TARGET SIGNAL STRENGTH meter and MTR RECEIVED SIGNAL meter, respectively.		
z.	On the target IF test generator, set the SLEW RATE switch to 50. Operate the SLEW switch to IN.		
aa.	When the auto rate stabilizes, set the SLEW RATE switch to 500.		
ab.	Observe the track data processor $\Delta y$ indicator. The indicator represents the range tracking error.		
	<i>Note.</i> Disregard the $\Delta h$ and $\Delta x$ indicators.		
	The $\Delta y$ indicator display does not exceed 3 yards.		
			Verify that the positions of the antennas are as set in <i>x</i> above.
ac.	Turn on the intercept computer printer/plotter to print at least three samples.		
ad.	Remove the printer/plotter printout and analyze the data.		
	The D STD DEV values do not exceed 0.5 yards.		
			Refer to step 3 above, specifically key numbers 15, 16, 25, 26, and 29.
	The TTR—MTRC D values do not exceed 3 yards.		
			Check operation of the RSPU range circuits.
ae.	The above tests can also be performed with different signal strengths. As the signal strength increases, the STD DEV will improve (get smaller). As an example, if the TTR is suspect, set the MTR IF test pulse to maximum amplitude to minimize any MTR contributions.		
af.	The above test can also be used to check TTR long pulse performance by switching the TTR to the long pulse mode. Do not change the IF test generator pulse width. The D STD DEV values should not exceed 1 yard. The TTR—MTRC D values should not exceed 6 yards.		
	<i>Note.</i> The above tests can be used by the TTR operators to train for acquiring and tracking targets of different sizes and velocities. The track data processor and/or intercept computer can be used to evaluate the performances. For such an evaluation, it is recommended that the MTR IF test generator attenuator be set to approximately 30 dB. The observed performance will then be essentially the performance of the TTR operator. If the long pulse mode is used, it will be necessary to repeat <i>r</i> , <i>s</i> , and <i>u</i> above.		

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(U) Table 6-9. Special Simultaneous Tracking Checks-TTR, MTR, and TRK-Continued

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Step	Operation	Normal indication	Corrective procedure
6.	Continued		
ag.	Set the MTR and TTR range switches to MAN.		
ah.	On the TTR IF test generator, set the switches as indicated:		
	Switch	Setting	
	OSC	OFF	
	SLEW	Center (off)	
	SLEW RATE	OFF	
	0-90 dB ATTENUATOR	90	
ai.	On the track data processor, set MODE SWITCH to TACTICAL. Set the MTR/TTR PARALLAX (YDS) switches to the site parallax.		
aj.	Reset the MTR RSPU BEACON DELAY switches to the value recorded in <i>t</i> above and depress the ENTER switch.		
ak.	Disconnect the coaxial cable connected between the TTR and MTR IF test generators. Reconnect the coaxial cables to J5 ATTN IN of each IF test generator.		
al.	Disconnect the coaxial cable added in <i>c</i> above.		
am.	Disconnect the coaxial cable from J1 on the track synchronizer and reconnect coaxial connector P26, disconnected in <i>a</i> above. Reconnect coaxial connector P99 to J1 on the test adapter.		
an.	Notify the computer operator that the checks have been completed.		

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